

BULLETIN OF MISCELLANEOUS INFORMATION No. 9 1937 ROYAL BOTANIC GARDENS, KEW

XLIX—NOTES ON THE FLORA OF SOUTHERN AFRICA : VII*. I. C. VERDOORN AND H. G. SCHWEICKERDT.

Acacia barbertonensis H. G. Schweickerd, sp. nov. [Mimosaceae] ; affinis *A. karroo* Hayne et *A. natalitiae* E. Mey., sed foliis subtus glanduloso-punctatis, marginibus foliorum subcrenatis, glandula sessili petioli semper absente, lobis calycis valde glanduliferis bene distinguitur.

Frutex vel arbor parva. *Rami* juniores striati, viscidi, glanduliferi, virido-brunnei vel brunnei, subteretes. *Spinae* stipulares valde evolutae, usque ad 4·5 cm. longae, albidae, divaricatae, rigidae, juniores glanduliferae. *Folia* bipinnata, ambitu anguste obovata, usque ad 12 cm. longa et 5 cm. lata, sed plerumque multo minora, inflorescentiam superantia ; petioli 5–15 mm. longi, glanduliferi, subtereti, supra valde canaliculati, glandula sessili absente. *Rhachides* primarii usque ad 7 cm. longi, superne leviter vel valde sulcati, glanduliferi, sursum semper glandulis sessilibus ad basin pinnarum obsiti ; pinnae usque ad 9-jugatae ; pinnarum rhachides usque ad 3·5 cm. longi, glanduliferi, superne sulcati ; foliola fere 10–14-juga, oblonga vel oblique elliptica, basi inaequilateralia et rotundata, apice rotundata vel acuta vel minute mucronulata, carnosula, glabra, viscida, subtus glanduloso-punctata, subsessilia, circiter 1·5–5 mm. longa, 0·75–2·0 mm. lata, inconspicue 1–3-nervia, costa leviter lateralialia, marginibus glanduloso-punctatis subcrenatisque. *Capitula* solitaria, axillaria, fere 1 cm. diametro, foliis breviora ; pedunculi usque ad 3·5 cm. longi, glanduliferi, supra medium articulati et conspicue bracteati. *Flores* sessiles, lutei. *Calyx* turbinatus vel obconicus, 1·5–2 mm. longus, 5-lobatus ; lobi obtusi vel subacuti, glanduliferi, 0·25 mm. longi. *Corolla* turbinata vel obconica, 3·5–4·00 mm. longa ; corollae tubus 2·5–3 mm. longus ; lobi subacuti vel obtusi, fere 1·0 mm. longi, recurvati. *Stamina* filiformia, circiter 5–6 mm. longa, antheris minutis. *Ovarium* glabrum. *Legumen* leviter vel valde curvatum (falcatum), planum, stipitatum, apice leviter vel valde rostratum, extra glanduliferum, in toto usque ad 8 cm. longum, 0·6–0·8 cm. latum, leviter torulosum vel margine plus minusve sinuatum, brunneum ; seminibus 3–6.

* Continued from K.B. 1935, 209.

TRANSVAAL PROVINCE: Barberton District; Komatipoort, Nov. 1936, comm. *Cotton Experimental Station, Barberton* (typus! Herb. Kew.):—native name "Lubibi"; Barberton, July 1933, leg. *A. Bayer*, s.n.

NATAL PROVINCE: Zululand; Inkungane River, 1000 ft., July 1935, *Bayer* 3446.

The above species is closely allied to both *A. karroo* Hayne and *A. natalitia* E. Mey. It may however be readily distinguished by the conspicuously glandular lower surface and the subcrenate margins of the leaflets, furthermore by the absence of the petiolar gland.

Henkel [Woody Plants of Natal & Zululand, 229 (1934)] states that this plant is "possibly hybrid between *A. karroo* Hayne and *A. glandulifera* Schinz." Until definite evidence is produced to this effect, I am inclined to believe that *A. barbertonensis*, which possesses certain characters not present in any of the supposed parents, is specifically distinct.

Artemisiopsis villosa (*O. Hoffm.*) *H. G. Schweickerdt*, comb. nov. [Compositae]; *Amphidoxa villosa* O. Hoffmann in Engl. Bot. Jahrb. **20**, 232 (1894). *Artemisiopsis linearis* Sp. Moore in Journ. Linn. Soc. **35**, 331 cum ic. tab. 8, fig. a-k (1902).

The nature of the pappus is somewhat variable. In the female florets it consists of either a short corona of rod-shaped hairs cohering laterally or interspersed between these hairs there are a number (1-8) of bristles exceeding the hairs much in length. In the hermaphrodite florets bristles and rod-shaped hairs usually form the pappus, more rarely the latter consists of rod-shaped hairs only. The pappus differs from that found in the genus *Amphidoxa* DC. in which the bristles are plumose-penicillate at the apex and naked towards the base.

The involucreal bracts, corolla-lobes and achenes bear many sessile subspherical glands. Similar glands are usually also found to be present on the lower surface of the leaves. Furthermore the leaf-margins may be either entire or remotely dentate.

Hoffmann, l.c., overlooked the true nature of the pappus and probably for this reason described the plant as a species of *Amphidoxa*.

Up to the present the genus *Artemisiopsis* appears to be monotypic and confined to Africa. Its geographic distribution as far as is known is as follows:—

TANGANYIKA TERRITORY: Moshi District, Ugueno, 800 m., 3.7.1893, *Volkens* 491 (Herb. Berol., Herb. Kew., Nat. Herb. Pret.).

NYASALAND: Without precise locality, leg. 1895, *John Buchanan* 405 (Herb. Mus. Brit.).

ANGOLA: Dombondola, leg. *Powell Cotton* 2532 (Herb. Kew.):—native name "Omepo."

SOUTH WEST AFRICA: Otjiwarongo District, Waterberg, May 1928, *Bradfield* 433 (Nat. Herb. Pret.).

Antherothamnus rigida (L. Bolus) E. P. Phillips in Bothalia, 3, ii. 271 (1937) [sphalm. *A. rigida* (L. Bolus) N.E. Br.] [Scrophulariaceae].

To the above the following generic and specific synonyms should be added :—

Selaginastrum Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zür. 74, 119 (1929).

Selaginastrum karasmontanum (Dinter) Schinz et Thellung l.c. ;

Selaginastrum rigidum (L. Bolus) Schinz et Thellung l.c. H.G.S.

Syncolostemon eriocephalus Verdoorn, sp. nov. [Labiatae] ; a speciebus omnibus inflorescentiis dense albo-sericeo-pilosis valde distincta.

Suffrutex 0.6–1.5 m. altus, valde ramosus ; ramuli sericei. *Folia* opposita, subsessilia, 5–9 mm. longa, 3 mm. lata, lineari-oblonga, argenteo-sericea, foliis minoribus subfasciculatis axillari-busque. *Paniculae* terminales, congestae dense albo-pilosae. *Bractee* ovatae, extra dense pilosae, circiter 6 mm. longae, 4 mm. latae. *Calyx* 5-lobatus, extra dense pilosus ; tubus 3 mm. longus ; lobi ovati, 1.1 cm. longi. *Corolla* alba, breviter exserta ; tubus 6 mm. longus, supra ovarium constrictus, 0.5 mm. diametro, faucem versus valde ampliatus, 3 mm. diam. ; corollae lobi inaequales ; superior brevissimus, 0.5 mm. longus, 1 mm. latus ; laterales truncati, 0.75 mm. longi, 2 mm. lati ; inferior 2 mm. longus canaliculatus. *Stamina* exserta ; 2 inferior 2 mm. longus, canaliculatus. *Stamina* exserta ; 2 inferiora filamentis conjunctis, 2 superiora filamentis liberis. *Ovarium* 4-partitum ; stylus 5 mm. longus, bifidus, exsertus.

TRANSVAAL PROVINCE : Lydenburg District ; Pilgrims Hill, D. Morisse 51 (type) ; Blyde River, L. C. C. Liebenberg 3551 ; Edge of Berg, 5000 ft., August 1923, Keet 1111 in *Nat. Herb. Pret.* 2750 :—among scattered bushes along stream ; common ; flowers white.

In localised spots on the high plateau in the Lydenburg District this shrub is found growing among rocks and along streams. It flowers during July–August and the congested, densely pilose panicles, which terminate the branchlets, together with the silvery grey twigs and leaves, make it a conspicuous feature in the otherwise brown wintry aspect of the vegetation. The small opposite leaves bear in their axils dwarf leafy shoots which make the leaves appear to be fascicled. The species is readily distinguished from all others in the genus by the densely pilose panicles.

L—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA : XXXII.* PLANTAE HINTONIANAE :† IV.

FURTHER NOTES ON THE GENUS BURSERA. A. A. BULLOCK.

It is to be regretted that a few alterations in the second edition of Engler und Prantl, *Die Natürliche Pflanzenfamilien*, were

* Continued from K.B. 1937, 310. † Continued from K.B. 1937, 310.

overlooked when the manuscript of my previous paper on the Mexican species of *Bursera** was prepared for the press. Engler in this, his last contribution to our knowledge of the Burseraceae, proposed several new combinations which would have been included in synonymy, and one (*B. confusa*) which was made again. There is a lapsus calami in Engler's account which should be corrected, namely, "*B. subsessiliformis*" for *B. submoniliformis* Engl.† In the previous paper also, the combination *B. arborea* (Rose) Bullock should read *B. arborea* (Rose) Riley in Kew Bull. 1923, 167.

A further very interesting batch of specimens of *Bursera* was collected by Mr. Hinton during 1936, mostly in the State of Guerrero, and the following notes are based on these.

It was found necessary to examine also the material from South America referred to *Bursera graveolens* (H. B. K.) Triana et Planch. before describing two of the new species; the material so named at Kew was found to be a mixture of *B. graveolens* and *B. tomentosa* (H. B. K.) Triana et Planch. as regards the South American specimens, whilst the material from Mexico was found to consist of at least two other distinct species. As most of the Mexican material has been distributed to several herbaria, it was thought advisable to draw attention to it by describing the species concerned. One of these, *B. fragrantissima*, is described by Mr. Hinton (*in litt.*) as "the most fragrant of them (*Bursera* spp.) all," and the specific epithet is based on this statement. In general appearance it resembles the South American *B. graveolens* (H. B. K.) Triana et Planch., but after careful comparison of the available material, I have concluded that that species does not occur in Mexico, and that it varies but little from the type as described by Kunth. On this hypothesis, it is easy to separate *B. fragrantissima* and all other Mexican material from it by means of somewhat slender leaf-characters, which are not as a rule of much value in this genus. This applies also to *B. inopinata*, which is a close ally of both *B. graveolens* and *B. fragrantissima*, and also of the now well-known *B. penicillata* (Sessé et Moc. ex DC.) Engl.

These notes complete the identification of all Mr. Hinton's collections of *Bursera* spp. with the exception of three numbers. These are not in suitable condition for critical determination, but are probably conspecific with other specimens enumerated in my earlier paper on the genus.

A further note, concerning *Bursera bipinnata* (Sessé et Moc. ex DC.) Engl. and its synonymy has been published separately, under the title "On the identification of *Rhus filicina* Sessé et Moc. ex DC."‡

Bursera confusa (Rose) Engl. in Engl. et Prantl, Nat. Pflanzenfam. 2 Aufl. 19a, 426 (1931); Bullock in Kew Bull. 1936, 356, cum syn.

* Bullock in K.B. 1936, 346-386.

† Bullock in K.B. 1937, 352.

‡ Bullock in K.B. 1937, 440.

STATE OF GUERRERO. District of Mina : Placeres*, 400 m., on wooded hills, July 1936 (fr.), *Hinton* 9062, "a slender tree 5 m. high"; Placeres-Mesa, 580 m., July 1936 (fr.), *Hinton* 9088, "a tree 5 m. high"; Patambo, 450 m., July 1936 (sterile), *Hinton* 9174, "a slender tree."

VERNACULAR NAMES : *Copal*, *guande*.

These three specimens, studied in conjunction with those listed previously, and again compared with *B. fagaroides* (H. B. K.) Engl., reveal a further character by which the two species can be readily distinguished. The leaves of *B. confusa* are discolourous, the lower surface being distinctly glaucous, while those of *B. fagaroides* are concolourous.

Bursera coyucensis *Bullock* in Kew Bull. 1936, 358.

STATE OF GUERRERO. District of Mina : Placeres, 450 m., July 1936 (fl.), *Hinton* 9047, "a copal 4 m. high, bark gray and smooth"; Anonas, in woods, July 1936 (sterile), *Hinton* 9067, "a tree 4 m. high, frequent at this locality"; *ibid.*, 360 m., July 1936 (fl., young fr.), *Hinton* 9068, "a spreading tree 6 m. high, wood pliable and sweet-scented."

These three specimens show that the leaves may be 3-7-jugate, as well as 3-5-jugate as stated in the original description, whilst the inflorescence, described from very young specimens, elongates to about 6 cm., the naked peduncle being about 2.5 cm. long.

Bursera diversifolia *Rose* in Contrib. U.S. Nat. Herb. **5**, 113 (1897); *Bullock* in Kew Bull. 1936, 359, cum syn.

STATE OF GUERRERO. Manchon, District of Mina, 1100 m., Aug. 1936 (fr.), *Hinton* 9262; "spreading tree 8 m. high: drops of gum exude from the lower part of the trunk: bark and leaves smell like ripe oranges."

As stated in the previous paper (*Bullock, l.c.*) this tree was known previously from a single collection made by Nelson (No. 3066) in the state of Chiapas, and for this reason it was suggested that there was a possibility of its being of hybrid origin. Mr. Hinton notes (*in litt.*), "I must give you a word of warning about *Bursera* no. 9262. I have not been able to find another tree and suggest it may be a sport or hybrid." The resemblance to *B. glabrifolia* (H. B. K.) Engl. previously noted, is again shown in Mr. Hinton's specimen, and it is suggested therefore, that *B. diversifolia* is a hybrid between *B. glabrifolia* and *B. bipinnata* (Sessé et Moc. ex DC.) Engl., both of which occur in the Mina district of Guerrero, and though I have seen no specimens, it seems likely that they also occur in Chiapas, where Nelson first collected *B. diversifolia*.

Bursera grandifolia (*Schlecht*) Engl. in Engl. Bot. Jahrb. **1**, 44 (1881), forma **robusta** *Bullock*, forma nov.; a typo habitu robustiore, foliis majoribus differt.

* Placeres has previously been placed in the Coyuca District.

STATE OF GUERRERO. Guadalupe, District of Montes de Oca, 1080 m., just below the oaks, Oct. 1936 (fr.), *Hinton* 9774, "a tree 7 m. high."

A large additional series of specimens of *B. grandifolia* (Nos. 9059; 9060; 9061; 9064; 9065; 9066; 9077; 9078; 9081; 9093; 9553), all from the Mina district, have also been received from Mr. Hinton. These show interesting variations in leaf-form, -size, and -indumentum, and include very large leaves from pollard shoots. The vernacular name is *guande blanco*. The hairy drupes characteristic of this species are also shown by the form named above, of which Mr. Hinton (*in litt.*) says, "... a variety of *B. grandifolia*; a well-established form easily distinguished . . . by the habit. I have seen it elsewhere."

Bursera Hintoni Bullock in Kew Bull. 1936, 366.

STATE OF MEXICO. Cañitas, District of Temascaltepec, Oct. 1936 (fr.), *Hinton* 9957 (from the same tree as the type specimen, *Hinton* 6991), "a tree 8 m. high."

STATE OF GUERRERO. Mina District: Placeres-Calavera, 500 m., near the river, July 1936 (sterile), *Hinton* 9108, "a young tree 6 m. high, resinous"; Placeres-Puerta, 720 m., at the head of a barranca, July 1936 (sterile), *Hinton* 9130, "a tree 10 m. high, trunk 30 cm. diam."; *ibid.*, 650 m. in a barranca, July 1936 (fr.), *Hinton* 9136, "a tree 7 m. high, bark smooth and grey"; Manchon, 1250 m., near the river, Aug. 1936 (fr.), *Hinton* 9246, "a spreading tree 12 m. high, frequent by streams and in barrancas from about 600 m. up to 1300 m. This tree taken as (ecological) type of the locality. The ripe fruit falls at a touch."

VERNACULAR NAME: *Tecomaca*.

Some of the specimens now cited show leaves even larger than those mentioned in the original description, and also show that the importance of the length of the infructescence was exaggerated. The latter, however, is always considerably longer than that of the comparatively little-known *B. excelsa* (H. B. K.) Engl., the only species with which it can be confused in the key to the Mexican species proposed in Kew Bull. 1936, 351-353.

Bursera jorullensis (H. B. K.) Engl. in Engl. Bot. Jahrb. 1, 44 (1881); Bullock in Kew Bull. 1936, 368, cum syn.

STATE OF GUERRERO. Placeres-Braziles, District of Mina, 400 m., July 1936, *Hinton* 9115; 9116; 9121. Santa Teresa, Mina District, 580 m. "in ripa fluminis Santa Teresa" Sept. 1936, *Hinton* 9362.

These specimens show an interesting variation in the rugosity of the upper surface of the leaf, and serve to confirm at least part of the synonymy suggested in my previous paper. Mr. Hinton's number 9115 was taken from a tree 4 m. high, and consists of three twigs bearing mature leaves (and young fruit), which although somewhat small, show the typical rugose nature of the upper

surface, which is also densely hairy. In addition there is a "shoot from the main trunk near the ground" (*fide* Hinton), with larger leaves showing no trace of rugosity; they are thinly herbaceous in texture, softly and comparatively thinly hairy above, and almost tomentose below. Number 9116 is a sterile twig from a "shrub 30 cm. high at the side of 9115." This is very similar in general appearance to the atypical part of number 9115, but the leaves tend to be larger, less hairy, and a little thicker in texture. Number 9121 has still larger leaves but is otherwise very similar to number 9116. It is from a shrub 1 m. high. Mr. Hinton notes that shrubs of this nature are of frequent occurrence, and that the root-system is generally separate from that of the parent tree; they are therefore either seedlings or root suckers.

The following specimens constitute a still further well-defined form. The characteristic rugosity of the leaflets is well shown, but the leaves and leaflets are smaller than in the type, and approach in size and form those of *B. velutina* (infra, p. 452). The species as represented by this form might be confused with *B. velutina* but for the longer, stouter inflorescences which appear with the mature leaves, and rougher indumentum.

STATE OF GUERRERO. District of Mina: Placeres, on low hills, frequent, July 1936 (fl.), *Hinton* 9046, "a tree 4 m. high"; *ibid.*, 450 m., July 1936 (fr.), *Hinton* 9048; Placeres-Cerrito, on wooded hills, July 1936 (fr.), *Hinton* 9056.

***Bursera sessiliflora* Engl. var. *pubivalvis* Bullock, var. nov.**, a typo *valvis* druporum extra breviter pilosis differt. *Arbor* 4-5 m. alta.

STATE OF GUERRERO. District of Mina: Placeres-Puerta, 800 m., a copal 4 m. high, at the head of a small arroyo, July 1936 (fr.), *Hinton* 9049, 9052 (type); Manchon, 1300 m., in an oak forest, Aug. 1936 (fr.), *Hinton* 9231, "a tree 4 m. high"; Vacas, 940 m., near the river, Aug. 1936 (fr.), *Hinton* 9273, "a tree 5 m. high"; Tierras Blancas, 1400 m., in oak woods, Nov. 1936 (fr.), *Hinton* 9914, "a young copal 4 m. high."

The rare occurrence of a hairy fruit in the genus *Bursera* induces one to wonder whether it is a character on which reliance can be placed. In *B. grandifolia* the hairy drupes seem to constitute a fixed and reliable specific character, the associated differential characters being somewhat vague though nevertheless constant. In the present case I have failed to find any other character by which the variety can be separated from Engler's species, and have recorded it as a named form chiefly in order to call attention to it.

***Bursera Tecomaca* (DC.) Standl.** in Publ. Field Mus. Nat. Hist. Chicago, Bot. Ser. 4, 217 (1929); Bullock in Kew Bull. 1936, 377, cum syn.

STATE OF GUERRERO. District of Mina; Placeres-Cameron, 500 m., on a dry hill, July 1936 (fr.) *Hinton* 9086, "spreading tree

6 m. high, also found at 660 m "; Vacas, 900 m., near the river, frequent, Aug. 1936 (fr.), *Hinton* 9276, "spreading tree 6 m. high"; Placeres-Cigarillo, 400 m., Nov. 1936 (fr.), *Hinton* 9793, "tree 5 m. high, leaves falling."

VERNACULAR NAME: *Guande*.

The identification previously given for this species (Bullock, *l.c.*), is further confirmed by the three specimens cited above. A noteworthy feature is the tardiness shown in the dehiscence of the drupes. Although Mr. Hinton notes that the leaves are falling in November, the drupes remain firmly closed, and are evidently not yet mature.

***Bursera trimera* Bullock** in Kew Bull. 1936, 379.

STATE OF GUERRERO. District of Mina: Placeres-Cameron, 450 m., July 1936 (sterile), *Hinton* 9083, "a tree 4 m. high"; Cigarillo, 500 m., July 1936 (fr.), *Hinton* 9106, "a tree 4 m. high, frequent here, in woods"; Placeres-Calavera, 500 m., July 1936 (fr.), *Hinton* 9107, "a spreading tree 5 m. high, rather frequent here on wooded hills"; Calavera, 450 m., Nov. 1936 (fr.), *Hinton* 9819 (from the same tree as No. 9107), "a spreading tree 5 m. high. The gum is said to be poisonous. Wood pliable."

VERNACULAR NAME: *Quincanchiri*.

Unifoliolate leaves are conspicuously absent on these specimens; number 9107 is the only one with long vegetative shoots, and number 9819 is leafless.

***Bursera velutina* Bullock** in Kew Bull. 1936, 380.

STATE OF GUERRERO. San Jose, District of Mina, 320 m. "in ripa fluminis San Jose," a shrub 2 m. high, Oct. 1936 (sterile), *Hinton* 9622.

There seems to be no doubt that this specimen is conspecific with those cited under the original description; the following, however, appear to be somewhat different, and may be worthy of varietal rank, a view also expressed by Mr. Hinton.

***Bursera velutina* var. *parvifolia* Bullock**, var. nov., a typo foliis foliolisque minoribus marginibus parcius et grossius dentatis, indumento foliorum denso sed brevior et adpressiore recedit. *Frutex* 1.5-3 m. altus.

STATE OF GUERRERO. Placeres, District of Mina, 400 m., on grassy hills with clumps of shrubs here and there, frequent, Aug. 1936 (sterile), *Hinton* 9192, 9193 (type).

The different appearance of the variety is due to the somewhat smaller leaves and leaflets, the latter with fewer and deeper teeth, and the shorter, more closely appressed, but equally dense, indumentum.

***Bursera dubia* Bullock**, sp. nov., peraffinis *B. heterestheti* Bullock (*infra*), sed indumento pubescente haud velutino, ramulis hornotinis et petiolis pedunculisque pubescentibus, foliolis supra demum

nitidis angustioribus basi saepe acute angustatis, calyce majore densius pilosis, staminibus abortivis numquam petaloideis satis distincta.

Arbor 8 m. alta ; ramuli hornotini tenuiter longe pubescentes ; rami annotini glabri, cortice rubro-brunneo, longitudinaliter striati, satis crassi. *Folia* apice ramulorum abbreviatorum congesta, vel secus ramulos elongatos alterna, saepissime pinnatim 5- vel 7-foliolata, nonnunquam 3-foliolata ; interstitia inter juga late serrato-alata, circiter 2 cm. longa et 5 mm. lata ; petioli exalati, 2-3.5 cm. longi, pubescentes ; foliolum terminale anguste rhombicum, apice subacutum, vix acuminatum, basi cuneatum, usque ad 6 mm. longum et 2-2.5 cm. latum ; foliola lateralia sessilia, saepissime anguste elliptica, vix ovata, apice subacuta, basin versus angustata, basi acuta vel obtusa vel angustissime rotundata, usque ad 5 cm. longa et 1.5-2.5 cm. lata, inferiora plerumque parum minora ; foliola omnia supra leviter nitida et breviter tenuiter pilosa, subtus pubescentia costa et nervis lateralibus venisque prominentibus, marginibus obtuse vel subacute regulariter serratis. *Inflorescentia* laxae thyrsoidae, pauciflora, foliis brevior, ex axillis perularum delapsarum orta, satis dense pubescens, glandulis stipitatis paucis oblecta, bracteis lineari-subulatis usque ad 1 cm. longis superne multo minoribus praedita, bracteolis nullis ; pedunculi 2.5-4 cm. longi ; pedicelli 5 mm. longi vel breviores. *Flores* tetrameri, feminei (abortivo-hermaphroditi) tantum visi. *Sepala* 4, basi in anulum coalita, triangularia, acuta, 2 mm. longa et circiter 0.5 mm. lata, extra longe pubescentia, intus glabra. *Petala* 4, oblonga, 3.5 mm. longa, apice subacuta et leviter cucullata, sub anthesi plus minusve naviculiformia, extra pubescentia, intus glabra. *Stamina* 8, sterilia, nunquam petaloidea, filamentis subulatis applanatis 1 mm. longis, antheris abortivis lineari-oblongis 1 mm. longis basin versus dorsifixis. *Discus* tenuis, planus. *Ovarium* ovoideum, apice angustatum, circiter 1.5 mm. longum ; stylus circiter 0.5 mm. longus apice stigmate capitato coronatus. *Drupae* anguste obovoideae, apice acutae, 1 cm. longae, 5 mm. diametro. *Semina* lenticuliformia, 3 mm. diametro, dimidio inferiore arillo rubro induta ; arillus cupuliformis, carnosus, lateraliter cuspidato-rostratus ; testa nigra.

STATE OF GUERRERO. District of Mina : Placeres-Cigarillo, 450 m., July 1936 (young fr.), *Hinton* 9045 ; *ibid.*, (from the same tree), Sept. 1936 (fr.), *Hinton* 9349 (type). District of Coyuca : Coahuilote, June 1935 (fl.), *Hinton* 7877.

The description of the leaves has been drawn up, mainly, from the mature specimen (no. 9349) and this accordingly has been selected as the nomenclatural type. The younger leaves of the other specimens are more densely hairy, and do not show the shining upper surface, or the prominent veins of the lower surface, indicated in the description. The absence of petaloid staminodes, and the longer, thinner indumentum constitute striking differences between

this and *B. heteresthes*; a further technical character is to be found in the gynoeceum, which in *B. heteresthes* possesses a bifid style and two capitate stigmas, whilst in *B. dubia* there is no sign of division except a shallow longitudinal groove down the middle of the style. The variation to be expected in the floral morphology of species of *Bursera* is, however, unknown and it is by no means certain that the differences noted are of specific value.

Bursera fragrantissima Bullock, sp. nov., a *B. penicillata* (Sessé et Moc. ex DC.) Engl. foliis plerumque 5-foliolatis multo majoribus glabris vel interdum leviter ciliatis et rachin versus leviter puberulis, infructescentiis longioribus, drupis majoribus facile distinguenda; a *B. graveolente* (H. B. K.) Triana et Planch. rachide foliorum vix alata, foliolis plerumque 5 majoribus grossius serratis, infructescentiis multo longioribus recedit.

Arbor fragrans, 6 m. alta; rami ramulique satis crassi, glabri, cortice rubro-brunneo. *Folia* apice ramulorum abbreviatorum congesta, internodiis brevissimis, vel secus ramulos elongatos alterna, pinnata, plerumque 5-foliolata, raro 3-foliolata vel in surculis 7-foliolata; rachis haud alata, glabra; petioli usque ad 12 cm. longi, vulgo 7-9 cm. longi, glabri; interstitia inter juga 4-6 cm. longa; foliolum terminale rhombico-obovatum vel rhombico-ellipticum, 10-12 cm. longum, 2.5-6 cm. latum sed plerumque circiter 4 cm. latum, apice caudato-acuminatum, ad basin cuneatum sed basi ipsa truncatum; foliola lateralia sessilia, quam terminale leviter minora et angustiora, basi leviter inaequilateralia et latius truncata, ceterum similia; foliola omnia grosse subacute vel obtuse serrata, supra leviter nitida et parum reticulata, subtus pallidiora, costa et nervis prominentibus leviter reticulata et rachin versus interdum leviter puberula, marginibus interdum brevissime ciliatis, ceterum utrinque glabra. *Inflorescentia* non visa, ut videtur ex axillis perularum orta. *Infructescentia* laxae thyrsioidea, circiter 20 cm. longa, glabra, ut videtur plus minusve pendens; pedunculi vulgo circiter 6 cm. longi, interdum vix 2 cm. longi; pedicelli 2-3 cm. longi. *Drupae* plus minusve ellipsoideae, circiter 1.2 cm. longae et 6 mm. diametro, 2-valvatae, valvis prius quam seminibus delabentibus. *Semina* lenticuliformia, 3.5 mm. diametro, dimidio inferiore arillo carnosio rubro lateraliter cuspidato-rostrato induta; testa nigra.

STATE OF GUERRERO. District of Mina: Manchon, 1150 m., Aug. 1936 (sterile single leaf of a sucker shoot), *Hinton* 9255; *ibid.*, 1200 m., Aug. 1936 (fr.), *Hinton* 9339; Idolo, 1140 m., "in ripa fluminis del Oro," Oct. 1936 (fr.), *Hinton* 9731 (type).

Bursera heteresthes Bullock, sp. nov.; a *B. penicillata* (Sessé et Moc. ex DC.) Engl. foliis 3- vel 5-foliolatis (foliolis nunquam numerosioribus) longius petiolatis, foliolis majoribus indumento breviori fere velutino recedit; a *B. coyucensi* Bullock foliolis majoribus dentibus marginalibus obtusis minus profundis indumento

multo brevior differt ; ab omnibus speciebus petiolis pedunculisque glabris sed foliolis dense pilosis valde distincta.

Arbor 6-10 m. alta ; rami ramulique glaberrimi, demum satis crassi, cortice rubro-brunneo et longitudinaliter lineato. *Folia* secus ramulos elongatos distanter alterna vel nonnunquam apice ramulorum lateralium abbreviatorum congesta ; petioli glaberrimi, usque ad 7 cm. longi ; foliola 3, digitatim disposita, vel 5, pinnatim disposita et interstitio inter juga late serrato-alato ; foliolium terminale haud petiolulatum, ovatum, usque ad 11 cm. longum et 5 cm. latum, apice acuminatum, basi cuneatum ; foliola lateralialia sessilia, ovata vel late ovato-lanceolata, usque ad 11 cm. longa et 5 cm. lata, apice acuminata, basi rotundata, parum inaequilateralialia, inferiora (folia 5-foliolata) leviter majora ; omnia (cum ala interstitialis) utrinque (subtus densius) pilis brevibus molliter velutina, marginibus obtuse serratis. *Inflorescentia* pyramidalis, laxe thyrsioidea, tota circiter 10 cm. longa, ex axillis perularum orta, demum e basi ramulorum hornotinorum 2-4-natis verticillata apparentia, glandulis minutis stipitatis sparse praedita ; pedunculi glabri, usque ad 5 cm. longi, ramis suboppositis 3-5-floris vel superne unifloris, bracteis anguste lineari-lanceolatis vel subulatis inferioribus usque ad 9 mm. longis pilosis et stipitato-glandulosis superioribus gradatim minoribus, bracteolis nullis, pedicellis 5-10 mm. longis. *Flores* tetrameri, ut videtur unisexuales, feminei tantum visi. *Calyx* parvus, ad annulum inaequaliter 4-dentatum redactus, dentibus triangularibus usque ad 0.5 mm. longis apicem versus leviter ciliatis. *Petala* 4, oblonga vel levissime spatulata, 3 mm. longa, 1 mm. lata vel paullo latiora, apice abrupte subacute angustata, extra praesertim linea media leviter pilosa. *Staminodia* 8, heteromorpha, petalis aequilonga vel breviora, petaloidea vel filamentis subulatis et antheris abortivis praedita, vel altero latere abortivo-antherifera altero latere petaloidea. *Discus* tenuis, planus. *Ovarium* ovoideum, 1 mm. altum et fere 1 mm. diametro, glabrum ; styli 2, coaliti, apicem versus divergentes, stigmatibus capitatis coronati. *Drupae* obovoideae, 8 mm. altae, 5-6 mm. diametro, glabrae, demum valvis 2 dehiscentes. *Semina* lenticuliformia, 3.5 mm. diametro, dimidio inferiore arillo luteo-rubro induta ; arillus carnosus, cupuliformis, lateraliter cuspidato-rostratus ; testa nigra.

STATE OF MEXICO. Cañitas, District of Temascaltepec, May 1935 (fl., young fr.), *Hinton* 7812 (type) ; *ibid.*, in a barranca, Oct. 1936 (fr.), *Hinton* 9958.

STATE OF GUERRERO. District of Mina : Placeres-Cameron, 450 m., July 1936 (young fr.), *Hinton* 9084 ; Placeres, 450 m., July 1936 (young fr.), *Hinton* 9044 ; Placeres-Cigarillo, 400 m., Sept. 1936 (fr.), *Hinton* 9348, "Fruit ripens gradually, i.e., not all together."

This species is one of those excluded from my previous paper on account of lack of adequate material. Only the specimen now designated as the type was then available. The description has

been drawn up from the two specimens from Temascaltepec, but the others, from Mina, agree with it in all essential characters.

The most obvious character of this species is the glabrous petiole combined with a densely hairy-leaf-blade, the latter with 3 or 5 leaflets. The terminal leaflet of a trifoliolate leaf is sometimes more or less deeply divided into two lobes, but this is obviously accidental and no account of it has been given in the description. The presence of small stipitate glands and weak silvery hairs on the inflorescence branches is briefly noted in the description and these probably constitute an important character. The eight staminodes of the female flowers are remarkable for their diversity of form. In the same flower no two are exactly alike, and they range from organs with subulate filaments and anthers with two empty thecae, to organs almost indistinguishable from petals. Intermediate forms with one side petaloid and the other bearing an anther theca, and others with both sides partly petaloid and partly theciferous, are also found. In every flower examined fertile anthers were absent, and I have not yet seen male or functionally hermaphrodite flowers.

Bursera inopinata *Bullock*, sp. nov., a *B. graveolente* (H. B. K.) Triana et Planch. foliolis plerumque numerosioribus, interstitiis inter juga inferiora alatis, perulis persistentibus apicem versus extra villosis, inflorescentiis longioribus, drupis majoribus recedit.

Arbor, statura ignota, probabiliter mediocris; truncus cortice exfoliato indutus (fide *Gentry*); rami glabri, cortice rubro-brunneo, satis crassi. *Folia* apice ramulorum abbreviatorum congesta, vel secus ramulos elongatos alterna, pinnatim 7-11-foliolata, matura utrinque glabra vel subtus nodis rachidis penicillato-barbata*; foliola anguste lanceolata (spec. *Pringle*) vel lanceolata (spec. *Gentry*) vel late ovato-lanceolata (spec. *Palmer*) 4-8 cm. longa, 1.5-4 cm. lata, apice plerumque caudato-acuminata; lateralia sessilia, basi plus minusve angustata sed basi ipsa rotundata vel truncata; terminalia basi acute cuneata; omnia marginibus grosse acute vel obtuse serrato-dentata. *Inflorescentia* laxae thyrsioidea, foliis junioribus aequilonga vel ea superans, ex axillis perularum vel foliorum orta; perulae subpersistentes, ovato-lanceolatae, usque ad 2 cm. longae, subacutae, extra intusque glanduloso-puberulae et apicem versus extra dense villosae; pedunculi usque ad 7 cm. longi, ramis inferioribus usque ad 5 cm. longis, bracteae inferioribus anguste folioso-spatulatis vel linearibus usque ad 1 cm. longis superioribus gradatim minoribus angustioribus ultimis parvis subulato-filiformibus; pedicelli ebracteolati, usque ad 5 mm. longi vel saepe breviores. *Flores* masculi tantum visi. *Calyx* cupuliformis, 1 mm. altus, glaber vel parcissime pilosus, 4-dentatus, dentibus triangularibus acutis 0.5 mm. longis. *Petala* oblonga vel leviter

* This is shown only by Pringle's fruiting specimen, No. 2333; this specimen is otherwise very similar to Pringle's number 2576, and it may be that both of them represent hybrids whose parentage includes *B. penicillata* (Sessé et Moc. ex DC.) Engl.

spatulata, 3.5 mm. longa, sub anthesi plus minusve naviculiformia, apice leviter cucullata, extra pilis paucis patentibus leviter induta. *Stamina* 8, filamentis subulatis 1.5 mm. longis, antheris oblongo-linearibus 1 mm. longis. *Discus* tenuis, planus. *Ovarium* nullum. *Infructescentia* foliis maturis aequilonga, pedicellis usque ad 1.75 cm. longis apicem versus leviter incrassatis. *Drupae* subglobosae vel leviter lateraliter compressae, apice breviter acute cuspidatae, 1 cm. diametro vel paullo ultra. *Semina* lenticuliformia, 6-7 mm. diametro, dimidio inferiore arillo induta; arillus carnosus, lateraliter cuspidato-rostratus.

STATE OF SONORA. San Bernardo, Rio Mayo, in the tropical Sonoran forest, Aug. 1935 (young fr.), *Scott Gentry* 1585 (distributed as *B. penicillata*) "a tree with peeling bark, herbage [used] for catarrh, resin for toothache and other ailments."

STATE OF CHIHUAHUA. "South-western Chihuahua," without precise locality, 1885 (fr.), *Palmer* Y (type).

STATE OF JALISCO. Rio Grande de Santiago, near Guadalajara, on rocky bluffs, Oct. 1889 (fr.), *Pringle* 2333; near Guadalajara, on rocky hills, June 1889 (fl.), *Pringle* 2576.

VERNACULAR NAMES: *Torote copal*; *Torote prieto* (*Scott Gentry*).

LI—AFRICAN ORCHIDS: IX*. V. S. SUMMERHAYES.

Brachycorythis (§ Basiphyllum) basifoliata *Summerhayes*, sp. nov.; affinis *B. Kalbreyeri* Rehb. f., a qua foliis plerumque radicalibus quam caulina pauca multo longioribus, petalis angustioribus, labelli epichilio simplici suborbiculari apiculato facile distinguenda.

Herba terrestris, circiter 60 cm. alta, glaberrima; caulis e rhizomate repente erectus, pro rata gracilis, teres, circiter 8-foliatus. *Folia* 3-4 infima radicalia, suberecta vel erecto-patentia, e vagina ampla 6-8 cm. longa exorientia, lineari- vel oblongo-lanceolata, apice acutata breviter apiculato-acuminata, basi in petiolum falsum attenuata, tota (vagina inclusa) 19-48 cm. longa, 2-3.5 cm. lata; folia caulina 4, suberecta, lanceolata vel oblongo-lanceolata, basi breviter vaginantia, apice acutata, breviter acuminata, 5.5-19 cm. longa, 1.5-2.5 cm. lata, folio supremo 5.5-7.5 cm. infra inflorescentiam disposito. *Inflorescentia* recta, circiter 17 cm. longa, 4-6 cm. diametro, subdense multiflora; rhachis gracilis; bractee foliaceae, lanceolatae, acuminatae, 1-5 cm. longae, infimae flores aequantes vel superantes. *Flores* erecto-patentes, laete purpurei; pedicelli cum ovariis 2-3 cm. longi. *Sepalum* intermedium erectum, elliptico-ovatum, rotundatum, 11-12 mm. longum, 6-7 mm. latum; sepala lateralia patentia, valde oblique elliptico-ovata, apice obtusa, 15 mm. longa, 9 mm. lata. *Petala* basi cum columna adnata, oblique oblongo-triangularia, basi latere antico valde dilatata fere cordata, apice rotundata, 11 mm. longa, juxta basin 8 mm. lata. *Labellum* porrectum, totum 2 cm. longum; basi utroque margine

* Continued from K.B. 1936, 233.

columnae adnatum, hypochilium saccatum rotundatum circiter 6 mm. longum formans; epichilium lateribus deflexis, suborbiculare, apiculatum, explanatum 14 mm. longum, 13 mm. latum, carina mediana angusta laevissima instructum. *Columna* circiter 6 mm. longa; antherae loculi erecti, paralleli, canalibus brevissimis; pollinii caudiculae breves, viscidia oblongo-elliptica, 1 mm. longa; staminodia compressa, suborbicularia; rostellus lobus intermedius plicatus, cucullatus, lobi laterales auriculiformes, brevissimi; stigma e basi columnari bilobum, lobis erectis \pm conicis apice subulatis.

PRINCIPE. Pico Papagaio, at summit and about 30 m. below, rare, Dec. 1932, *Exell* 680 (type in Herb. Mus. Brit.) ; 725.

At first I thought that this plant represented a new genus, but on careful examination I have come to the conclusion that it can be placed satisfactorily in *Brachycorythis*. The most striking features are the very long radical leaves and few, quite distant cauline ones, the whole effect thus produced being totally different from that in any other member of the genus. The nearest relative of *B. basifoliata* is undoubtedly *B. Kalbreyeri* Rchb. f., which possesses flowers of about the same size. The column structure in these two species is almost identical, as is also the lip hypochile. With regard to the epichile, *B. basifoliata* can, I think, be regarded as having lost the two large projecting and incurved side-lobes so characteristic of *B. Kalbreyeri* and other members of sect. *Calocorythis*, the central apiculus of the lip of these species thus corresponding to the apex in *B. basifoliata*. As the possession of these side lobes is considered by Schlechter as a diagnostic character of sect. *Calocorythis* I do not feel justified in including the new species in it. I am therefore proposing a new section, *Basiphyllum*, to contain the new species. The diagnosis is as follows:—

Basiphyllum sect. nov. *Brachycorythidis*, ab omnibus aliis sectionibus generis foliis radicalibus caulinis multo longioribus, caulinis paucis, labelli epichilio simplici suborbiculari differt.

Species unica—*B. basifoliata* Summerhayes.

Disperis thomensis Summerhayes, sp. nov.; affinis *D. Kerstenii* Rchb. f., a qua floribus minoribus, labelli appendicibus multo brevioribus intus dense papillosis ut videtur dimidio inferiore connatis differt.

Herba terrestris, umbricola, 10–15 cm. alta. *Tuber* plus minusve cylindricum, circiter 1 cm. longum. *Caulis* erectus, basi vagina membranacea instructus, supra medium bifolius, apice 1–3-florus. *Folia* opposita, breviter petiolata, basi vaginantia; lamina ovata, breviter acuminata, basi rotundata vel subcordata, 2–3 cm. longa, 1.3–2.1 cm. lata. *Flores* reclinati, albi; bracteae foliaceae, lanceolatae, acuminatae, ovario pedicellato multo breviores. *Sepalum* intermedium lanceolatum, acutum, valde concavum, dimidio superiore valde inflexum, cum petalis connatum, galeam brevem

obtusam e basi sepali circiter 5 mm. longam formans; sepala lateralibus oblique obovata, 6 mm. longa, 2.8 mm. lata, margine antico calcaribus incurvato-conico 2.5 mm. longo instructa. *Petala* ambitu anguste oblonga, incurvata, 6.5 mm. longa, margine antico basi ampliata rotundata, margine postico medio lobo suberecto 1.5 mm. longo ornata, apice breviter bifurcata, furca antica quam postica longiore. *Labellum* basi per 2 mm. ad columnam adnatum, supra columnam lineare, erectum, 4.5 mm. longum, apice abrupte inflexum, apiculum brevissimum obtusum formans, facie superiore juxta apicem appendicibus duabus 6 mm. longis, triente inferiore erectis, deinde reflexis, dimidio inferiore connatis intus papillosis apice bipartitis, partitione postica anguste oblonga obtusa, partitione antica lineari apice leviter ampliata leviter incurvata. *Anthera* 1.8 mm. longa; staminodia late truncato-deltaeidea, 0.5 mm. lata. *Rostelli* brachia porrecta, apice leviter ampliata, 1.5 mm. longa. *Ovarium* 1.2–1.7 cm. longum.

SÃO TOMÉ. Vanhulst (Macambrará), 1050–1200 m., virgin forest, in a shady place, Oct. 29th 1932, *Exell* 136 (type in Herb. Mus. Brit.) ; Oct. 31st 1932, *Exell* 179.

Clearly related to the East African *D. Kerstenii* Rchb. f., on the one hand, and to *D. dicerochila* Summerhayes on the other. In the former the appendages of the lip are much longer, are free from the base and the apical lobes are somewhat spreading or retrorse. In *D. dicerochila* the appendages, although free as in *D. Kerstenii*, are even shorter than in *D. thomensis*. In neither species are the appendages reflexed halfway along; in *D. Kerstenii* they are reflexed with respect to the lip from their point of origin, while in *D. dicerochila* they are erect. In the Transvaal species *D. virginialis* Schltr. and *D. Nelsonii* Rolfe the appendages are also erect, although somewhat longer than in *D. dicerochila*. It is evident that this interesting group within the genus is generally distributed over the tropical parts of Africa, although as yet no species has been found in "Upper Guinea." *D. Reichenbachiana* Welw., an Angolan species, which was also collected by Mr. Exell in São Tomé, is less closely related to *D. thomensis* than are the species previously mentioned.

Nervilia Kotschy (Rchb. f.) Schltr. in Engl. Bot. Jahrb. **45**, 404 (1911). *Pogonia Kotschy* Rchb. f. in Oesterr. Bot. Zeitschr. **14**, 338 (1864). *P. purpurata* Rchb. f. & Sond. in Flora, **48**, 184 (1865). *Nervilia diantha* Schltr. in Engl. Bot. Jahrb. **53**, 553 (1915).

An examination of the type specimens of the above cited "species" leads me to conclude that they are conspecific, the trivial name *Kotschy* having a few months priority over *purpurata*. The species is widely spread in Tropical Africa and occurs also in the Transvaal. There is considerable variation in the number and size of the flowers, but I have seen intermediates linking all the extremes. The type of *P. Kotschy*, which comes from the Sudan, is a small-flowered form with only one or perhaps two flowers in the

inflorescence. The Transvaal *P. purpurata*, on the other hand, consists of larger-flowered specimens with two or three flowers, while as many as four flowers occur on some of the Kenya Colony and Uganda specimens in the Kew Herbarium. The sepals vary in length from 12–23 mm.

Orestias stelidostachya Summerhayes, comb. nov. *Microstylis stelidostachya* Rchb. f. Otia Bot. Hamburg. 2, 118 (1881). *Orestias elegans* Ridl. in Journ. Linn. Soc. Lond. 24, 198, t. 6 (1887).

Examination of the type specimens of these two species shows that the floral structure is identical, the close resemblance of the vegetative parts having already been pointed out by Ridley. Presumably both Ridley and Rolfe accepted Reichenbach's statement that the column of his species is like that of other *Malaxis* (*Microstylis*) species. This, however, is not the case. The rostellum in Mann 1151 (type of *M. stelidostachya*) is much broadened and fan-shaped, exactly as in other specimens of *Orestias*. I have seen numerous gatherings of *Orestias* made by Mr. Exell in St. Thomas and all show clearly this remarkable rostellum structure. Ridley is also mistaken in stating that the pollinia are not attached to the rostellum. The attachment, which is to the outer angles of the rostellum on each side, can be easily seen both in specimens of this species and of the newly described *O. micrantha*. So far as I can see *Orestias* differs from *Malaxis* only in the rostellum. Other African species of the latter genus, however, although very similar vegetatively and in general floral features, show no intermediate characters, the rostellum being quite narrow in each species. It seems, therefore, most satisfactory to maintain *Orestias* as a distinct genus, but it is undoubtedly very closely allied to *Malaxis* § *Katochilus*.

Orestias micrantha Summerhayes, sp. nov. ; ab *O. stelidostachya* (Rchb. f.) Summerhayes floribus minoribus, labello transverse hexagono-elliptico distinguenda.

Herba terrestris, usque ad 30 cm. alta ; rhizoma repens, gracile, circiter 2 mm. diametro. *Caules secundarii* erecti vel adscendentes, 2–6 cm. longi, inferne vaginis 2–3 lanceolatis acutis suprema interdum lamina parva instructa \pm obtecti, superne vel apice 3–4-foliati. *Folia* breviter petiolata, late lanceolata vel ovato-lanceolata, acuta vel leviter acuminata, basi \pm rotundata vel subcordata, 2–6 cm. longa, 1.5–3 cm. lata, siccitate tenuiter chartacea, petiolo cum vagina 1–2 cm. longo. *Inflorescentia* erecta, simpliciter racemosa, 10–22 cm. longa, gracilis, \pm dense multiflora ; pedunculus 5–8 cm. longus, cataphyllis pluribus sessilibus lanceolatis acutissimis inferioribus basi cordatis amplexicaulibus superioribus bractei-formibus instructus ; bractee lanceolatae, acuminatae, 1.5–3 mm. longae. *Flores* sordide purpurascentes, ovario cum pedicello 1–2.5 mm. longo. *Sepalum* intermedium lanceolato-oblongum, subacutum, 2.5–3 mm. longum, 1.3 mm. latum, uninervium ;

sepala lateralibus oblique ovata vel oblongo-ovata, subacuta, 2.3 mm. longa, circiter 1.5 mm. lata, sub-binervia. *Petala* falcatis lanceolato-ligulata, apice bilobata, circiter 2.75 mm. longa, basi 0.75 mm. lata, margine superiore ciliata. *Labellum* sessile, transverse hexagono-ellipticum, apice leviter retusum, basi auriculis rotundatis vix 0.5 mm. longis, circiter 1.5 mm. longum et 2.5 mm. latum, quinquenervium, nervis tribus centralibus \pm parallelis exterioribus arcuatis, juxta nervos intermedios pulvinis duobus ellipticis pubescentibus instructum. *Columna* incurvata, fere 1 mm. longa, \pm teres, sursum angustata, apice in rostellum late flabellatum subito dilatata; anthera columnae dorso affixa, fere quadrata; pollinia anguste ellipsoidea, rostellis angulis cohaerentia.

CAMEROONS. Bipinde, 1897, *Zenker* 1380 (type); Ekuk, 22 km. E. of Ebolowa, 700 m., June 1911, *Mildbraed* 5733.

This species differs from *O. stelidostachya* (Rchb. f.) Summerh. in the smaller flowers and relatively shorter and broader lip, which possesses two quite distinct pubescent cushions, one on each side of the three central parallel nerves, in the centre of the lip. In *O. stelidostachya* there is usually one large pubescent spot; which is sometimes represented by two distinct ones. These, however, are much nearer the base of the lip and closer together than in *O. micrantha*.

ANSELLIA Lindl.

For some time now botanists have had difficulty in classifying the plants forming this genus. In the Flora of Tropical Africa Rolfe admitted five species, in addition to the South African *A. gigantea* Rchb. f. The species were separated by such characters as the relative widths of the sepals and petals, the number of keels or crests on the lip and their nature, and the sizes of the leaves and flowers. With the accumulation of much more material it has become increasingly difficult to maintain Rolfe's classification in its entirety. Many of his characters as set out are neither constant nor correlated with any other characters.

In my partial treatment of the genus in the Flora of West Tropical Africa I reduced the five tropical species to two, namely, *A. africana* Lindl., with a predominantly western distribution, and *A. nilotica* N. E. Br., which is mainly eastern in distribution. These species were separated by a number of not very well-defined but generally correlated characters. Since then I have studied additional material from southern and eastern Tropical Africa and have also included *A. gigantea* in my investigations.

This study has confirmed my original view that there are two species, one western and one eastern in distribution, the South African plants coming within the limits of the latter. There is, however, a certain amount of further geographical segregation, but this in my opinion does not warrant assigning specific rank to all of the segregates. The following are the species and varieties recognised by me.

***Ansellia africana* Lindl.** in Bot. Reg. 1844, sub t. 12. *A. confusa* N. E. Br. in Lindenia, **2**, 36 (1886).

This species, in its widest concept, occurs throughout the western half of Tropical Africa and also in Uganda. It is characterised chiefly by the broad lip with a short, broad, almost obicular middle lobe and by the relatively heavy spotting of the tepals.

In the type form, which occurs in the northern part of the range of the species, the petals are much broader than the sepals and the usually two keels of the lip run out into tubercles on the front lobe.

In Angola, however, there is a form, which, while conforming in general features with *A. africana* type, differs in having the petals only slightly wider than the sepals, while the keels of the lip do not form tubercles in the front part of the middle lobe but gradually die out about half-way along the middle lobe. This I am maintaining as a separate variety, as follows :—

***A. africana* var. *australis* Summerhayes**, var. nov. ; a typo petalis quam sepalis paulo latioribus tantum, labelli lobo intermedio antice non tuberculato differt.

I have seen the following specimens of this variety :—

ANGOLA. R. Kubango, near Chirimba, 1200 m., Oct. 1899, *Baum* 280 (type of variety) ; R. Kunene, below junction with R. Chitanda, 1100 m., Sept. 1899, *Baum* 107 ; Loanda District, *Gossweiler* 494 ; N. of Loanda, sea level, on *Hyphaene benguellensis*, June 1901, *Gossweiler* 12 ; R. Cwelli, 1340 m., on trees in forest, Sept. 1925, *Pocock* 700.

***A. gigantea* Rchb. f.** in Linnaea, **20**, 673 (1847).

***A. gigantea* var. *nilotica* Summerhayes**, comb. nov. *A. africana*, var. *nilotica* Baker in Trans. Linn. Soc. Lond. **29**, 154 (1875). *A. nilotica* N. E. Br. in Lindenia, **2**, 36 (1886). *A. congoënsis* Rodigas ex N. E. Br. in Lindenia, **2**, 30, 35, t. 64 (1886). *A. humilis* Bull. Cat. 1891, p. 3.

The above two forms constitute the species *A. gigantea* Rchb. f. in its widest sense. The species is characterised by the relatively narrow petals and especially by the lip, which is nearly always longer than broad and relatively narrow compared with that of *A. africana*. The middle lobe is long and narrow, usually with a distinct claw, while the central nerve is frequently raised to form an additional low keel between the other two at the base of the middle lobe. In addition the spotting of the petals is less heavy and the spots smaller than in *A. africana*, usually on a yellow or greenish-yellow ground.

A. gigantea proper is restricted to Natal, the southern Transvaal, Swaziland and Delagoa Bay. It has relatively small flowers (sepals 15–23 mm. long), very lightly spotted or self-coloured tepals and practically no development on the lateral lobes of the lip of the low keels which are so characteristic of the tropical forms. The plants,

nevertheless, seem to reach much the same dimensions as in the variety.

A. gigantea var. *nilotica* is distributed from Northern Nigeria, Uganda and Kenya Colony in the north, southwards through the eastern parts of Tropical Africa to the Transvaal and Zululand. The flowers are usually considerably larger than in the type (sepals 20–35 mm. long), although forms with smaller flowers do occur, especially in Northern Nigeria. The spotting is nearly always heavier than in *A. gigantea*, while the low keels on the side lobes of the lip are generally clearly and often strongly developed. It will be seen that the differences between type and variety are mostly those of degree, but the very considerable correlation between the various characters in the South African specimens justifies the separation of this form, which has to be taken as the nomenclatural type of the species. Taxonomically, since *Ansellia* is clearly mainly a Tropical African genus, *A. gigantea* type may be regarded as a locally segregated race of the much more widely-spread and more variable var. *nilotica* !

In the delimitation of the species and varieties dealt with only floral characters have been used. There are, however, other respects in which individuals differ from one another, such, for instance, as the fleshiness or slenderness of the pseudobulbs, the number and size of the leaves, the amount of branching and rigidity or otherwise of the inflorescence. So far as I have been able to judge, these differences are not correlated in any satisfactory manner with one another or with either the floral characters or the geographical distribution. However, it must be admitted that in a number of specimens all the necessary data of this type are not available. It may also be possible to separate the species, etc., on ecological grounds, but at present our knowledge is insufficient for this purpose.

Polystachya (§ Caulescentes) parviflora *Summerhayes*, sp. nov. ; affinis *P. eleganti* Lindl., a qua mento brevi nec cylindrico, labello fere quadrato differt ; *P. polychaeten* Kraenzl. revocans, sed inflorescentia paniculata, bracteis multo brevioribus nec subulato-aristatis, foliis brevioribus praedita ; ab utraque labello basi carina alta instructo satis distinguenda.

Herba epiphytica ; caules caespitosi, e rhizomate brevi orti, erecti, fere stricti, 10–20 cm. alti, inferne vaginis imbricantibus acutis obtecti, dimidio superiore 3–5-foliati. *Folia* suberecta, lineari-oblonga vel anguste elliptico-oblonga, apice angustata, breviter sub-acute bidentata, supra articulum 4–14 cm. longa, 7–15 mm. lata. *Inflorescentia* terminalis, paniculata, erecta, tota 10–13 cm. longa ; pedunculus 6–7 cm. longus, spathis duabus valde compressis imbricantibus apice obtusis breviter incurvatis omnino obtectus ; rhachis glabra ; rami e rhachidis dimidio inferiore orti, 2–4, suberecti vel erecto-patentes, usque ad 2 cm. longi ; bractae lanceolatae, acuminatae, ovario pedicellato satis breviores ; pedicelli cum ovariis 2–4 mm. longi, rubri. *Flores* erecto-patentes,

minuti, virides. *Sepalum* intermedium oblongo-ovatum, apiculatum, 1.8 mm. longum, 1.3 mm. latum; sepala lateralia oblique triangularia, apiculata, cum pede columnae mentum obtusum 1 mm. longum formantia. *Petala* oblique oblongo-elliptica, rotundata, uninervia, 1.3 mm. longa, vix 1 mm. lata. *Labellum* ex ungue fere nullo ambitu fere quadratum, angulis lateralibus rotundato-subacutis, apice paulo truncatum, 1.6 mm. longum et latum, basi carina (vel lamella) alta fere quadrata postice recurvata antice \perp abrupte terminata instructum. *Columna* brevissima, crassa, vix 1 mm. alta, pede incurvato circiter 1 mm. longo; anthera hemisphaerica.

SÃO TOMÉ. Vanhulst (Macambrará), in virgin forest, 1050–1200 m., Nov. 1932, *Exell* 193a (old fruit only); 450 (type in Herb. Mus. Brit.; isotype in Herb. Kew.).

This interesting species stands in certain respects midway between Kraenzlin's sections *Caulescentes* and *Calluniflorae*. In vegetative characters the species agrees with sect. *Caulescentes* whereas the shape of the leaves and small flowers are characteristic of many species of sect. *Calluniflorae*, in which, however, the bracts are long-aristate and reflexed. *P. parviflora* resembles very closely both *P. elegans* Lindl. in the former section and *P. polychaete* Kraenzl. in the latter. From these species it may be distinguished by the characters given in the diagnosis; a striking feature is the high quadrate lamella at the base of the lip.

Bulbophyllum thomense *Summerhayes*, sp. nov.; affine *B. tenuicauli* Lindl., a quo pseudobulbis brevioribus, florum colore, sepalis longioribus, petalis lineari-oblongis subacutis, labello majore differt.

Herba epiphytica, pusilla; rhizoma repens, gracile, 1–1.5 mm. diametro; pseudobulbi 3–8 cm. distantes, ovoidei vel elongato-ovoides, \pm 4-angulati, 1–2 cm. longi, 5–8 mm. diametro, apice bifoliati. *Folia* elliptico-oblonga, interdum sursum leviter attenuata, apice rotundata, obtuse et brevissime bilobulata, 1.8–3.2 cm. longa, 4–7 mm. lata. *Scapi* folia superantes, \pm erecti, graciles, 6–8 cm. longi, subaxe 10–15-flori; pedunculus 2.5–3.5 cm. longus, vaginis 2–4 \pm arctis haud imbricantibus instructus; bractee erecto-patentes, ovatae, acutae, 3–4 mm. longae, rubescentes. *Flores* suberecti, atro-rubri. *Sepalum* intermedium lanceolatum, acutum, 6.5–7 mm. longum, circiter 2.5 mm. latum; sepala lateralia oblique lineari-lanceolata, subacuta, basi latiora, circiter 6.5 mm. longa, basi 2 mm. lata. *Petala* lineari-oblonga, leviter curvata, subacuta, basin versus leviter angustata, 2 mm. longa, circiter 0.5 mm. lata. *Labellum* arcuatum, \pm oblongum, basi latius, leviter canaliculatum fere breviter bialatum, apice rotundatum, circiter 2.5 mm. longum, 1 mm. latum, dense ciliatum, facie superiore brevissime papillosum. *Columna* brevis, crassa, tota 1.7 mm. longa, stelidiis erectis subulatis acutis dorso basi obtuse dentatis 0.5 mm. longis, antherae filamento triangulari acuto multo longioribus, pede incurvato 2 mm. longo.

SÃO TOMÉ. Lagôa Amelia, in the crater swamp, 1260 m., Nov. 1932, *Exell* 390 (type in Herb. Mus. Brit.; isotype in Herb. Kew.). "Epiphytic on *Schefflera Mannii*; flowers dark red."

Angraecum (§ Pectinaria) doratophyllum *Summerhayes*, sp. nov.; affine *A. pungenti* Schltr., a quo floribus majoribus, labelli calcar ore perlato fere triplo longiore medio valde incurvato facile distinguendum.

Herba epiphytica, caulibus repentibus vel \pm pendulis ramosis multifoliatis gracilibus usque ad 35 cm. longis 2-3 mm. diametro parte basali radicibus brevibus flexuosis glabris instructis. *Folia* vaginis paulo imbricatis, suberecta vel cum caule fere parallela, lanceolata, apice pungentia, basi in pseudo-petiolum constricta, carnosa, 1.5-4 cm. longa, 3-5 mm. lata. *Flores* ut videtur solitarii, albi; pedicellus cum ovario 7-10 mm. longus, basi cataphyllis pluribus brevibus obtusis praeditus. *Sepalum* intermedium lanceolato-lineare, subacutum, 11 mm. longum, 1.5 mm. latum; sepala lateralia intermedio similia sed leviter obliqua. *Petala* linearia, subacuta, basi leviter angustata, leviter curvata, 10 mm. longa, vix 1 mm. lata. *Labellum* perlate ovatum, apice recurvato-acuminatum, 6.5 mm. longum, 7.5 mm. latum, inferne in calcar sensim transiens; calcar ex ore latissimo medium versus angustatum, deinde valde recurvatum et leviter inflatum, totum 13-14 mm. longum. *Columna* brevis, 1.5 mm. longa; anthera hemisphaerica, medio leviter sulcata; pollinia pyriformia, stipite uno ligulato 1 mm. longo, viscidio late lunato cornibus reflexis incurvatis fere 1 mm. longo et lato; rostellum usque ad basin bifidum, lobis subacutis.

SÃO TOMÉ. Vanhulst (Macambrará) in virgin forest, 1050-1200 m., Nov. 1932, *Exell* 193; 254 (type in Herb. Mus. Brit.; isotype in Herb. Kew.); 446.

Almost identical with *Angraecum pungens* Schltr. in vegetative characters but showing many differences in the flowers. Of particular interest is the very wide mouth to the spur, which is sharply recurved about the middle. As in *A. pungens* and its near relatives the pollinia are attached to a common viscidium, but in *A. doratophyllum* there seems to be also a stipe which is absent in *A. pungens* and *A. subulatum* Lindl., the pollinia there being sessile.

Angraecopsis gracillima *Summerhayes*, comb. nov. *Mystacidium gracillimum* Rolfe in Kew Bull. 1913, 144.

Unfortunately there is no authentic type specimen of Rolfe's species extant, but from a study of the original description and of the material in the Kew Herbarium it is evident that the above new combination is correct. There are two specimens, both accepted as *Mystacidium* by Rolfe, which agree with the description and undoubtedly belong to the genus *Angraecopsis*. One of these was received from the Glasnevin Botanic Gardens and was said to come from Uganda; the other was collected by E. Brown in Uganda and

was received through Sir Trevor Lawrence in 1908. Since *Mystacidium gracillimum* was described from a plant cultivated at Glasnevin and collected by E. Brown in Uganda, it seems probable that the two Kew specimens are from the same source as the type. There are several other more recently collected specimens at Kew, all from Uganda or western Kenya Colony, in the vicinity of Mt. Elgon and Lake Victoria. Brown's specimen was collected in the Mabira Forest, E. of Kampala.

The species differs from *A. tenerrima* Kraenzl., the type species of the genus, to which it is most closely allied, in the narrower and longer leaves, the rather smaller flowers and in the lateral lobes of the lip being narrow and much shorter than the fleshy middle lobe. In some specimens the flowers are somewhat larger than those described originally, the lateral sepals being nearly 1 cm. long.

LII—NEW TREES AND SHRUBS FROM TROPICAL AFRICA: V.* H. DUNKLEY.

Rinorea Burtt-Davyi Dunkley, sp. nov. [Violaceae]; affinis *R. albiflorae* Engl. (inter sectiones *Choriandra* Engl. et *Synandra* Engl.) sed antherarum appendicibus suborbiculatis haud filiformibus, sepalis haud sulcatis, petalis flavis differt.

Frutex; ramuli glabrescentes. *Stipulae* subpersistentes, subulatae, setulosae, 4 mm. longae. *Folia* membranacea, elliptica vel elliptico-lanceolata, usque ad 7.5 cm. longa et 3 cm. lata, basi late cuneata usque inaequaliter rotundata, apice acuminata minutissime mucronata, margine dentibus glandulosis crenato-serrulata, utrinque glabra, nervis venisque elevatis; nervi laterales utrinque circiter 9, arcuati et crebre conjuncti; petiolus breviter pubescens, 3 mm. longus. *Racemi* axillares, puberuli, pauciflori, bracteis concavis ovatis 1 mm. latis muniti; pedicelli puberuli, 5 mm. longi. *Sepala* 5, ovata, obtusa, ciliolata, 1 mm. longa. *Petala* glabra, oblongo-elliptica, apice rotundata, nervosa, 6 mm. longa et 3 mm. lata. *Stamina* 5 libera; filamenta 2 mm. longa. *Antherae* biloculares, basifixae, 1 mm. longae; connectivum suborbiculatum margine fimbriatum. *Ovarium* glabrum, oblongum, obscure 3-lobatum et sulcatum, 4 mm. longum. *Stylus* glaber, ex toto exsertus, 4 mm. longus stigmatibus integro. *Fructus* non visus.

SOUTH TROPICAL AFRICA. Nyasaland: Cholo Mt., 25 Sept. 1929, *Burtt Davy* 22182 (type, in Kew Herb.). "In shade."

Rinorea myrsinifolia Dunkley, sp. nov. [Violaceae]; affinis *R. ardisiiflorae* Welw., sed floribus solitariis, antherarum appendicibus longiacuminatis brevioribus, foliis multo minoribus differt.

Frutex; juvenilia primum ferrugineo-tomentella; ramuli mox glabrescentes. *Stipulae* binae, ovatae, 1 mm. longae. *Folia* glabra, lanceolato- vel oblongo-ovata, usque ad 3.5 cm. longa et 1.7

* Continued from K.B. 1935, 265.

cm. lata, basi rotundata vel inaequaliter rotundata, apice obtusa mucronata, margine dentibus apice glandulosis irregulariter crenulata, supra nitida olivaceo-viridia, subtus pallida, nervis venisque utrinque elevatis; nervi laterales arcuati, utrinque 6-9; petiolus tomentellus, 2 mm. longus. *Flores* solitarii; pedunculi 3 mm. longi, bracteis late ovatis ciliatis 1 mm. longis instructi; pedicelli tomentelli, 5 mm. longi. *Sepala* 5 ovato-orbiculata, obtusa, extra tomentella, intus glabra, 2 mm. longa. *Petala* glabra, oblongo-lanceolata, 6 mm. longa et 2.5 mm. lata. *Tubus stamineus* pilosomarginatus, 1.5 mm. longus. *Antherae* 2 mm. longae; connectivum longe acuminatum, 4 mm. longum. *Ovarium* glabrum, subglobosum, 2 mm. diametro. *Stylus* glaber, exsertus, 5 mm. longus. *Placentae* 3, uniovulatae. *Fructus* non visus.

SOUTH TROPICAL AFRICA. Nyasaland: Mangoche Mt., S.E. of Lake Nyasa, 1934, *Clements* 465 (type, in Kew Herb. and Imperial Forestry Institute Herb., Oxford); Mangoche Mt., Nov. 1935, *Clements* 573.

Vernacular name: "Ngalango" (Yao).

Garcinia mlanjiensis Dunkley, sp. nov. [Guttiferae]; affinis *G. polyanthae* Oliv. [sectio *Rheediopsis* Pierre], sed floribus in fasciculo paucis, pedicellis multo brevioribus et crassioribus, filamentorum parte libera valde brevior, foliis minoribus angustioribus differt.

Arbor magna, robusta, ubique glabra; ramuli juniores in sicco sulcati, leviter complanati. *Folia* coriacea, elliptica vel lanceolato-elliptica vel elliptico-oblonga, usque ad 14 cm. longa, 5.5 cm. lata, apice sensim acuminata, basi cuneata, supra nitidula, subtus opaca lineis resinosis obscuris laxe reticulatis, margine paullum revoluta; nervi laterales numerosi, patentes, supra subprominentes, in nervum submarginalem conjuncti; petiolus supra canaliculatus, sulcatus, tumidus, 1-2 cm. longus. *Flores* ♂ axillares, glomerati; *pedicelli* circiter 5-7 mm. longi; *bractee* late ovatae, 1 mm. latae; *bracteolae* sub calyce 2, concavae, 2.5 mm. longae. *Sepala* 4, cucullata, oblongo-orbiculata, 3 mm. longa. *Petala* 4, suborbiculata, 4 mm. lata. *Stamina* 32, in phalanges 4 petalis oppositas connata, filamentis complanatis, dimidio superiore liberis [parte libera 1.5 mm. longa], antheris bilocularibus, thecis ovoideis. *Flores* ♀ et *fructus* non visi.

SOUTH TROPICAL AFRICA. Nyasaland: Mt. Mlanje, Lichenya Plateau, c. 1950 m., in warm-temperate rain-forest associated with *Canthium Gueinzii* Sond., *Royena lucida* L., *Dasylepis Sereti* De Wild., *Aphloia myrtiflora* Galp., *Lasianthus kilimandscharicus* K. Schum., *Gymnosporia acuminata* Szyszyl., *Ilex mitis* (L.) Radlk., *Olea Welwitschii* (Knobl.) Gilg & Schell., etc., Burt Davy 22045 (type, in Kew Herb., and Imperial Forestry Herb., Oxford); 22134. Luchenza Plateau, Mlanje Mt., Topham 931, 932. "A large vigorous tree."

The same species was collected also on Nchisi Mt. in the interior of warm-temperate rain-forest, c. 1350 m. alt., where it formed the

most common undergrowth, *Burtt Davy* 21244. In this forest it occurred, also, as a tall, straight, cylindrical tree, with trunk 12 to 18 inches diam., associated with *Ficus mallotocarpa* Warb., *F. Kirkii* Hutch.?, *Trichilia emetica* Vahl, *Bosquiea angolensis* Ficalho, etc. The native names given on Nchisi Mt. were mTundiri (Yao); mSongwe (Chisi), where they were applied also to *G. mbulwe* Engl. Dr. Burtt Davy had no native with him when the Mlanje specimens were collected, so that no native names were obtained for them there.

Cleistanthus Milleri Dunkley, sp. nov. [Euphorbiaceae-Brideleeae]; affinis *C. bipindensi* Pax., sed filamentis liberis, stylis trifidis, et foliis minoribus haud longe caudato-acuminatis differt.

Arbor parva. *Ramuli* teretes, juventute breviter ferrugineo-tomentosi, demum glabrescentes. *Folia* coriacea, glabra, oblongo-elliptica vel obovato-elliptica, usque ad 10 cm. longa, 5 cm. lata, basi rotundata vel late cuneata, apice obtusa breviter acuminata vel rotundata, margine integerrima leviter undulata; costa supra breviter tomentosa; nervi laterales utrinque circiter 8, subtus leviter elevati; petiolus circiter 6 mm. longus, tumidus, tomentosus. *Stipulae* binae, ovatae, acuminatae, 6 mm. longae. *Racemi* axillares, dense ferrugineo-tomentosi, 3 cm. longi, floribus circiter 12 valde proterogynis; bractae ovatae, 1 mm. longae; pedicelli 6 mm. longi. *Flores* ♂: *Sepala* 5, reflexa, ovato-lanceolata, sub-aequalia, 6 mm. longa 2 mm. lata, intus glabra extra puberula. *Petala* 5, glabra, ligulata vel spatulata, 1 mm. longa. *Discus* irregulariter lobatus, tomentosus. *Stamina* 5, filamentis liberis glabris 2 mm. longis, antheris basifixis 2 mm. longis. *Ovarium* abortivum pilosum, 2 mm. longum. *Flores* ♀: *Sepala* et *petala* ut in floribus ♂. *Discus* ovarium cingens. *Ovarium* subglobosum, pilosum, 3-loculare, 3 mm. diametro. *Ovula* 2 pro loculo, late ovata, complanata. *Styli* 3, pilosi, stigmatibus bilobo. *Capsula* ignota.

SOUTH TROPICAL AFRICA. Northern Rhodesia: Oct. 1932, O.B. Miller D.158 (type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford). "Small tree, marginal to fringing forest, near source of Mwambeshe stream, alt. 1680 m."

Vernacular name: "muSamvia" (Mambwe).

Drypetes zombensis Dunkley, sp. nov. [Euphorbiaceae]; affinis *D. ugandensi*, a qua ovario cum fructu dense velutino, foliis basi conspicue inaequalibus margine spinoso-dentatis, petiolis ramulisque pubescentibus differt.

Frutex, ramulis leviter sulcatis griseo-pubescentibus. *Folia* glabra, tenuiter at rigide subcoriacea, 12-17 cm. longa, 3-5 cm. lata, elliptica vel lanceolato-elliptica, apice obtuse acuminata, basi conspicue inaequalia rotundata, margine dentibus utrinque circiter 20 regulariter spinoso-dentata, nervis lateralibus utrinque 8-9 intra marginem anastomosantibus supra distinctis subtus leviter elevatis; petiolus supra canaliculatus, tumidus, griseo-pubescent, 8 mm. longus. *Stipulae* minutae. *Fasciculi* unisexuales, ♀ ex

trunco (?) vel ex ramis vetustioribus orientes. *Flores* ♀ pedicellis puberulis usque ad 1.5 cm. longis. *Sepala* 5, inaequalia, orbicularia, 4-6 mm. diametro, glabra, integerrima, marginem versus tomentella. *Discus* ater, undulatus, glaber, inconspicuus. *Ovarium* globosum, circiter 5 mm. diametro, dense velutino-pubescent, 3-loculare, ovulis pro loculo 2. *Stigmata* 3 vel 4, sessilia, subreniformia. *Semina* pro loculo 1. *Flores* ♂ non visi.

SOUTH TROPICAL AFRICA. Nyasaland: Mt. Zomba, Oct. 1929, *J. B. Clements* 35 (type, in Kew Herb.).

Vernacular name: "muNgunga" (Yao).

Albizzia (Eualbizzia) nyasica Dunkley, sp. nov. [Mimosaceae]; affinis *A. Schimperianae* Oliv., sed floribus subsessilibus, foliolis apice rotundatis, et costa mediana differt.

Arbor circiter 10 m. alta, 25 cm. diametro. *Ramuli* glabri, striati, conspicue lenticellati. *Folia* usque ad 20 cm. longa, 12 cm. lata; petiolus 4-6 cm. longus, sparse puberulus, supra glandula leviter elevata 1 cm. a basi munitus; rhachis circiter 10 cm. longa; pinnae oppositae 6-jugatae; pinnarum rhachides 9 cm. longae, inter foliola terminalia glandulosae, stipellis geminis linearibus minutis. *Foliola* 11-13-jugata, glabra, breviter petiolulata, oblonga, apice rotundata vel breviter mucronata, basi rotundata inaequilateralia, 1.3 cm. longa, 6 mm. lata; costa utrinque elevata; nervi laterales utrinque circiter 5. *Inflorescentiae* pedunculatae, capitatae circiter 30-florae, in ramulis novissimis axillares, plerumque geminatae; pedunculi 2.5-3.5 cm. longi, breviter ferrugineo-tomentosi. *Flores* subsessiles, puberuli. *Calyx* campanulatus, 2 mm. longus, minute deltoideo-dentatus. *Corolla* 5 mm. longa, lobis lanceolato-ellipticis acutis fere dimidium longitudinis attingentibus. *Stamina* circiter 40, primum rosea, glabra, 2 cm. longa, in tubum 3 mm. longum connata; antherae versatiles, minutae. *Ovarium* sparse pilosum, breviter stipitatum. *Stylus* 1.3 cm. longus, glaber. *Legumen* plano-compressum, oblongum, usque ad 20 cm. longum et 4 cm. latum, chartaceum, pustulatum, sparse puberulum; stipes 1.2 cm. longus. *Semina* circiter 10, late ovata, compressa, 1 cm. longa, 8 mm. lata.

SOUTH TROPICAL AFRICA. Nyasaland: Mangoche Mt., Nov. 1935, *Clements* 574 (type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford); Mangoche Mt., *Clements* 453, "Tree about 35 ft. high and 10 in. diameter, bark dark grey, smooth, with a few galls up the stem." *Clements* 454, "Young coppice shoots adjacent to trees from which 453 was obtained." Lake Plains, April 1935, *Clements* 541.

Vernacular name; "mPirakututu" or "mSilakukutu" (chiNyanja).

Lecaniodiscus Vaughaniae Dunkley sp. nov. [Sapindaceae]; affinis *L. fraxinifoliae* Baker, a qua drupa globosa haud rostrata, foliolis distincte petiolulatis glanduloso-punctulatis, et staminibus regulariter 8 recedit.

Arbor usque ad 10 m. alta, ramulis striatis prominenter lenticellatis minute furfuraceis. *Folia* exstipulata, circiter 5-jugata, 20–30 cm. longa, 10–15 cm. lata; petiolus circiter 4 cm. longus, basi tumidus; rhachis 10 cm. longa, internodiis 1.5–3 cm. longis. *Foliola* subopposita, glabra, dense glanduloso-punctulata, lanceolato-vel ovato-elliptica, 5–7 cm. longa, 2–3 cm. lata, basi inaequalia rotundata vel late cuneata, apice obtusa; costa supra paullum impressa, subtus conspicue elevata; nervi laterales utrinque 10–12; petiolulus 3–4 mm. longus, tumidus. *Racemi* axillares, puberuli, usque ad 7 cm. longi; pedicelli 4 mm. longi, fasciculati, fasciculis 3–5-floris. *Flores* ♂: *sepala* 3, deltoideo-ovata, 3 mm. longa; *petala* 0; *discus* glaber, irregulariter 5-lobatus; *stamina* 8, filamentis glabris, antheris dorsifixis; *ovarium abortivum* pilosum. *Flores* ♀: *sepala* 4–5; *petala* 0; *stamina* 8; *ovarium* globosum, molliter velutinum, stigmatibus sessilibus 3-lobato. *Fructus* subglobosus, 1 cm. diametro; stylus et calyx fructu persistentes; *semen* erectum, testa crustacea brunnea rugosa.

EAST TROPICAL AFRICA. Zanzibar: J. H. Vaughan 2301 (type, ♂ in Kew Herb.); Vaughan 2178 (with fruits, ♀). "A tree up to 40 ft." (In Kew Herb., Brit. Mus. Herb., and Imperial Forestry Institute Herb., Oxford).

Bersama zombensis Dunkley, sp. nov. [Melianthaceae]; affinis *B. maximae* Baker, sed stylo brevior, staminibus haud monadelphis, petalis et foliorum pagina inferiore haud glabris, foliolis integris recedit.

Arbor magna, fere omnino dense ferrugineo-tomentosa, ramulis fortiter striatis. *Folia* imparipinnata, 5–8-jugata, usque ad 30 cm. longa et 15 cm. lata; stipulae intrapetiolares 6 mm. longae, ovatae vel lanceolato-ovatae, caudato-acuminatae; petiolus 3–4 cm. longus, basi tumidus, supra canaliculatus; rhachis 15–18 cm. longa, conspicue alata, supra praeter floccos interpetiولulares glabra, internodiis plerumque 2.5–3 cm. longis. *Foliola* opposita, oblongo-elliptica, elliptico-lanceolata, vel nonnunquam obovata, 5–9 cm. longa, 2–3.5 cm. lata, basi rotundata vel late cuneata et breviter decurrentia, apice late acuta vel obtusa, supra glabra nitida, subtus dense et molliter aureo-pubescentia, margine integra; costa supra paullum impressa, subtus conspicue elevata; nervi laterales utrinque 11; petiolulus circiter 2 mm. longus, fortiter canaliculatus. *Racemi* prope apicem ramulorum axillares, usque ad 18 cm. longi, 200–300-flori; pedunculus conspicue striatus, 6 cm. longus; pedicelli 3–4 cm. longi, bracteis filiformibus 4 mm. longis. *Calyx* extus dense tomentosus, intus glaber, persistens; lobi 5 (2 connati), subaequales, 6 mm. longi, 3 mm. lati, ovati, apice acuti, basi connati. *Petala* 5, reflexa, oblongo-ligulata, breviter sericea; unguiculi 7 mm. longi; anticorum lamina 1 cm. longa et 5 mm. lata, posticorum 1.5 cm. longa et 2.5 mm. lata. *Stamina* 4, filamentis 1.5 cm. longis per paria connatis basi pilosis, antheris basifixis 3 mm. longis. *Discus* 2-lobatus, incompletus, glaber. *Ovarium* pilosum, 4–5-loculare; stylus

crassus, 7 mm. longus, stigmatе globoso 5-lobato. *Ovulum* pro loculo 1, erectum. *Fructus* lignosus, ovoideo-globosus, obscure 4-5-valvatus, ad 2.5 cm. longus, 1.5 cm. latus, dense et molliter roseo-tomentosus, stylo persistente terminatus. *Semina* 3, oblongo-elliptica, 5 mm. longa, 3 mm. lata.

SOUTH TROPICAL AFRICA. Nyasaland: Zomba district; *Clements* 503 (type, in Kew Herb. and Imperial Forestry Institute Herb., Oxford). Zomba district, *Clements* 334, 406 (with fruits), 577. "A very large tree, stream-banks only, good timber." Dec. 1935. Vernacular name: "mChinji" (Yao).

Lannea Stuhlmannii Engl. var. ***tomentosa*** Dunkley, var. nov. [Anacardiaceae]; a typo differt ramulis paniculis et foliis conspicue et longe stellato-pilosis, foliis saepe 4-jugis.

SOUTH TROPICAL AFRICA. Northern Rhodesia: Bombwe, *Martin* 357 (type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford); 30 Nov., 1932, *Martin* 406, "A large tree." Mazabuka, *Stevenson* 142/30, 445/32, 483/33. Southern Rhodesia: Matopos, *Eyles* 6623, "Large tree, bark peels"; Gatooma Commonage, alt. 1140 m., *Eyles* 7262, "Tree on sand veld." Vernacular names: "muOnga" (Chila), "muBumbu" (Chitoka and Sikololo).

Solanum Burt-Davyi Dunkley, sp. nov. [Solanaceae]; affinis *S. acanthocalyci* Klotzsch, sed partibus omnino pilis urentibus ferrugineo-stellatis longe stipitatis obtectis facile distinguitur.

Frutex lignosus, scandens. *Ramuli* subflexuosi, cum petiolis et pedunculis dense ferrugineo-stellati, aculeis recurvatis pallide stramineis 4 mm. longis. *Folia* alterna, irregulariter ovata, nonnunquam obscure pinnatiloba, usque ad 8 cm. longa, 3.5 cm. lata, basi inaequalia rotundata vel irregulariter truncata, apice acuta vel acuminata, supra olivacea, pilis stellatis albidis brevibus rigide atque dense scabridiuscula, subtus pallide fulvo-cinerea, pilis stellatis albidis longe stipitatis dense et pilis ferrugineis sparse oblecta, margine pilis rubris stellatis longe stipitatis dense ciliato; nervi laterales utrinque 5-6, supra paullum impressi, subtus elevati; *petiolus* usque ad 3 cm. longus. *Cymae* terminales, 3-5-florae; *pedunculus* aciculatus, circiter 2 cm. longus. *Flores* violaceae; *alabastra* ovata, acuta, aciculis sat rectis stramineis conspicue armata. *Sepala* 5, elliptico-ovata, 1.5 cm. longa, 5 mm. lata, apice longe acuminata, intus glabra prominenter costata. *Corolla* ad basin partita; *lobi* 5, oblongo-ovati, apice late acuti, extus tomentosi, intus praeter costam elevatam tomentosam glabri. *Stamina* inter se aequalia, *filamentis* brevissimis, antheris oblongis 6 mm. longis. *Ovarium* subglobosum, stellato-pilosum, 2-loculare; *stylus* erectus, cylindricus, glaber, stigmatе minuto obscure bilobato. *Fructus* haud visus.

SOUTH TROPICAL AFRICA. Nyasaland; Mt. Nchisi Rain Forest, Sept. 4th, 1929, *Burt Davy*, 21193 (type, in Kew Herb.). "A climber in shade, by stream: hairs irritant; large purple and yellow flowers."

LIII—NOTES ON CAREX: II.* E. NELMES.

NEW SPECIES FROM EAST TROPICAL AFRICA.

Among the sedges collected by Dr. George Taylor on the British Museum Expedition to East Tropical Africa in 1934-35, are two new species of *Carex* belonging to the section *Pseudocypereae* Tuckerm. This group, though containing few species, has representatives in most temperate and subtropical parts of the world. The commonest species, *C. Pseudocyperus* itself, occurs all round the northern hemisphere, and varieties of it are found in Australasia and South America, but its relatives in tropical and south Africa are specifically distinct.

The two new African species, which I have called *C. Taylorii* and *C. pseudo-sphaerogyna*, have utricles with the rather shorter and broader beaks and straighter teeth of the South African species, *C. cognata* Kunth, and the central African *C. congolensis* Turrill. *C. Taylorii* presents, in its rich chocolate coloured spikes, a striking contrast to most other members of the section, which are markedly yellowish in colour. It has a long scabrid awn, and stands almost alone in its group by reason of the scabrous-ciliate beak to the utricule, and in having the scabridity of the awn running half-way down the three nerves on the back of the glume. *C. pseudo-sphaerogyna* looks superficially remarkably like the Mascarene *C. sphaerogyna* Baker, but close examination proves it to be nearer to Turrill's *C. congolensis*.

Carex Taylorii Nelm., sp. nov.; affinis *C. cognatae* Kunth, sed spicis chokolatineis, squamarum aristis longissimis, utriculis suberectis, rostris latioribus brevioribus et parce scabro-ciliatis differt.

Culmi 1 m, alti, validi, angulis acutis superne scabris. *Folia* 1 cm. lata, plana, supra et marginibus scabra, superiora inflorescentiam longe superantia; vaginae basilares reticulatim fissae, in statu juvenali rubro-brunneae. *Spicae* 6, 4-5 cm. longae, infima remotiuscula excepta approximatae, cylindricae, chokolatinae, terminalis mascula breviter pedunculata, laterales femineae, crassae, densiflorae, inferiores breviter, superiores brevissime pedunculatae. *Bractee* evaginant, inferiores late foliaceae, inflorescentiam longe superantes, superiores tenuiter foliaceae. *Squamae* 3-3.5 mm. longae (arista exclusa), oblongo-ellipticae, chokolatinae, nitidae, apice ciliatae, supra medium nervis tribus scabrae, in aristam planam longissimam (4-6.5 mm.) scabro-ciliatam sensim excurrentes. *Utriculi* 4 mm. longi, 2 mm. lati, ovato-elliptici, membranacei, suberecti, subinflati, compresso-trigoni, inferne straminei, superne chokolatini maculati nitidi, 6-8-nerves, breviter et valde stipitati, marginati, in rostrum mediocre latum planiusculum profunde bidentatum (dentibus strictis) marginibus parce scabro-ciliatis sensim

* Continued from K.B. 1937, 355.

desinentes. *Nux* laxe inclusa, oblonga, trigona, faciebus concavis. *Stigmata* 3.

KENYA COLONY: Naivasha District; Aberdare Mountains, Kinangop, in marsh, with 1354, *C. Petitiana* A. Rich., 3000 m., fr. 27 Oct. 1934, *G. Taylor* 1354a.

Carex pseudo-sphaerogyna Nelmes, sp. nov.; affinis *C. congolensi* Turrill, sed foliis angustioribus, spicis minoribus, utriculis tenuioribus brevioribus tenuiter nervatis, nucibus minoribus differt.

Culmi 40–52 cm. alti, angulis acutis superne scabris. *Folia* 4–5 mm. lata, pallida flavo-viridia, planiuscula, longe attenuata, marginibus minute scabra, superiora inflorescentiam superantia; vaginae pallidae, basilares parce reticulatim fissae. *Spicae* 4–5, plerumque 5, 2.5–3 cm. longae, brevissime pedunculatae, infima remotiuscula excepta approximatae, brunneae, terminalis mascula lineari-cylindrica, laterales femineae cylindricae, subdensiflorae. *Bractae* foliaceae, evaginantes, inferiores inflorescentiam longe superantes, superiores tenuiter foliaceae. *Squamae* oblongo-ellipticae, subhyalinae, vitta mediana pallide viridi-brunnea, trinerves, apice ciliatae, 2 mm. longae (arista exclusa), in aristam 1.5–2 mm. longam planam scabro-ciliolatam excurrentes. *Utriculi* 3.5 mm. longi, 1.3 mm. lati, elliptici, membranacei, suberecti, subinflato-trigoni, brunnei, 6–8-nerves, angustissime marginati, brevissime stipitati, in rostrum mediocre laeve latiusculum bidentatum (dentibus strictis vel vix divergentibus) sensim desinentes. *Nux* laxe inclusa, oblongo-elliptica, trigona, faciebus concavis, pallida. *Stylus* tortuosus, basi subincrassatus. *Stigmata* 3.

UGANDA: Kigezi District; Virunga Mountains, north-west end of Lake Bunyoni, on margin of swamp, fr. 27 Nov. 1934, *G. Taylor* 2146.

LIV—PLANTS NEW TO ASSAM: IX.* C. E. C. FISCHER.

The regions shown in brackets after the name of each species are those from which it has been previously recorded.

Clematis Meyeriana Walp. [Ranunculaceae].

(China).

Naga Hills: Khegwo, 4000 ft., *N. L. Bor* 2854; Nimi, 4500 ft., fls. sweet-smelling, March, *N. L. Bor* 2881.

Aconitum Elwesii Stapf [Ranunculaceae].

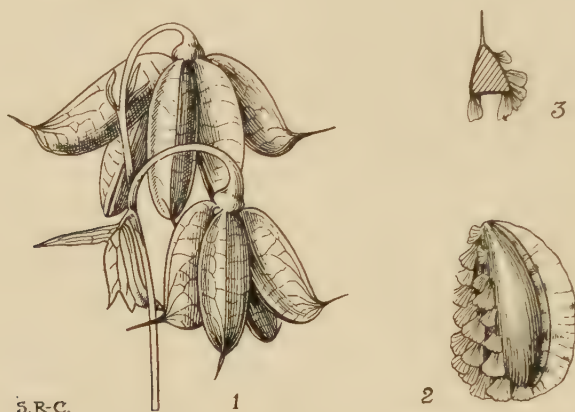
(Sikkim).

This is the *A. uncinatum* Hook. f. et T. in Fl. Brit. Ind., but not of Linn.

Naga Hills: Rangkhü Pass, Chingkhü, 8800 ft., frt. (flowers just over) Nov., *N. L. Bor* 6778. The follicles being unknown, the following details derived from this specimen are given:

* Continued from K.B. 1936, 286.

Follicles nearly glabrous in maturity, 1.6–2 cm. long, 5–7 mm. wide; compressed, strongly reticulately veined; style horizontal. *Seeds* oblong, wedge-shaped in section, black, 3.5–4.5 mm. long, 2.4–3 mm. wide, winged along the raphe, the other edge furnished with hyaline lammellae.



Aconitum Elwesii Stapf. 1, end of rhachis with fruit, nat. size; 2, seed, lateral view, $\times 6$; 3, seed, transverse section, $\times 6$.

***Podophyllum aurantiocaul* Hand.-Mazz.** [Berberidaceae].

(Yunnan).

Delei Valley, 10,000 ft. in conifer forest, fls. white, May, *F. Kingdon Ward* 8265.

In K. B. 1929, 249, this same specimen was erroneously quoted as *P. versipelle* Hance, but it is actually the above species.

***Uraria hispida* Schindl.** [Papilionaceae].

(Yunnan).

Naga Hills: Themokedima, 4500 ft., fls. pink Sept., *N. L. Bor* 6173. A shrub.

***Pottingeria acuminata* Prain** [Hydrangeaceae].

(N. Burma and Yunnan).

Naga Hills: Nimi, 4500 ft., fls. March, *N. L. Bor*. 2882, "a small shrub."

***Oxyspora serrata* Diels** [Melastomataceae].

(N. Burma and Yunnan).

Naga Hills: Khonoma, 6000 ft., fls. mauve, July, *N. L. Bor* 6334, "a shrub."

***Quercus Engleriana* Seem.** [Cupuliferae].

(China).

Delei Valley: Chibaon, 28° 10' N: 96° 30' E, 6000–8000 ft., *F. Kingdon Ward* 8053, "a large evergreen tree of the rain forest";

Delei Valley, 28° 21' N. : 96° 37' E., 9000 ft. and under, *F. Kingdon Ward* 8305, "a large, tall, evergreen tree with unbranched trunk and a big spreading crown of branches at the summit; scattered in the Tsuga-Rhododendron forest, sometimes 2 or 3 together. The only *Quercus* to ascend so high and not common; possibly commoner lower down."

***Dioscorea kamoensis* Kunth var. *staminea* Prain et Burk.**
[Dioscoreaceae].

(N. Burma, W. China and Siam).

Naga Hills : Paona, 5500 ft., fls. Sept., *N. L. Bor* 6265.

***Carex mercarensis* Hochst.** [Cyperaceae].

(S. India).

Naga Hills : Ridima, 5800 ft., fls. & frt. April, *N. L. Bor* 2763.

***Carex teres* Boott** [Cyperaceae].

(Sikkim).

Naga Hills : Zekwera, 6000 ft., in a marsh, fls. April, *N. L. Bor* 2737.

LV—EPIPOGUM OR EPIPOGIUM.

T. A. SPRAGUE and M. L. GREEN.

The name of this genus has been spelt in four different ways since 1753, namely, *Epipogium*, *Epipogum*, *Epipogon* and *Epipogion*.

According to International Rules, Art. 70, the original spelling must be retained except in the case of a typographic or clearly unintentional orthographic error. The words "original spelling" in this article mean the spelling employed when the name was validly published.

At the time when the Index Kewensis was prepared the starting-point for nomenclature of genera was not 1753, but 1735, the date of publication of Linné's *Systema Naturae*, ed. 1. Hence the name *Epipogum* S. G. Gmel. (1747) was adopted in the Index.

Ehrhart, *Beiträge*, 4, 148 (1789) altered the spelling to *Epipogium*, but as indicated in International Rules, Art. 67 (3), this and certain other names published by Ehrhart, which resemble generic names, are actually "unitary designations of species," and must be rejected unless they have been published as generic names by a subsequent author.

The spelling *Epipogum* was adopted by L. C. Rich. in *Mém. Mus. Par.* 4, 42, 50 (1818). This was "corrected" to *Epipogon* by Ledebour, *Fl. Ross.* 4, 77 (1853), and to *Epipogion* by St.-Lager in *Ann. Soc. Bot. Lyon*, 7, 144 (1880).

Pfeiffer's *Nomenclator*, 1, 1222 (1874) cites Sprengel, *Anleit.* 2, Abth. 1, 285 (1817) as having adopted the name *Epipogium* Ehrh. (1780). Reference to Sprengel (l.c.), however, showed that he

attributed *Epipogium* to Robert Brown, and the first valid publication of this name has now been traced to R. Br. Prodr. 330, 331 (1810). There it is unaccompanied by a description, but *Epipogium* is attributed by Robert Brown, on p. 331, to Gmelin, who gave a generic description under the spelling *Epipogum* (Fl. Sibir. 1, 11: 1747). The citation of Gmelin by Robert Brown is an *implicit* reference to Gmelin's previously and effectively published description, and accordingly validates the name *Epipogium* R. Br. under International Rules, Art. 37. References to the places of publication of the various spellings are given below.

Epipogium R. Br. Prodr. 330, 331 (1810); Sw. Summa Veg. Scand. 32 (1814); Spreng. Anleit. 2, Abth. 1, 285 (1817).

Epipogum L. C. Rich. in Mém. Mus. Par. 4, 42, 50 (1818).

Epipogon Ledeb. Fl. Ross. 4, 77 (1853).

Epipogion St.-Lag. in Ann. Soc. Bot. Lyon, 7, 144 (1880).

[*Epipogum* Gmel. Fl. Sibir. 1, 11 (1747).]

The case of *Epipogium* illustrates the point that, under the International Rules, the citation of a previously and effectively published description of a genus need not include a precise reference to its place of publication, so long as there is no reasonable doubt as to the work intended.

LVI—MISCELLANEOUS NOTES.

IVAN K. URUMOFF.—We record with deep regret the death of the veteran Bulgarian botanist, Ivan K. Urumoff, on October 9th, 1937, at the age of 81.

Urumoff belonged to the older generation of Bulgarian botanists, much of whose work was accomplished under conditions of extreme difficulty. He was born in 1856 and well remembered the last years of Turkish domination in Bulgaria. After studying at Heidelberg, Urumoff returned to his own country and threw himself with enthusiasm into investigating the native flora. The absence of any Flora or manual of Bulgarian plants till the appearance of Velenovský's "Flora Bulgarica" in 1890, and the extreme poverty of botanical literature of all sorts, led him to seek help from foreign botanists in determining much of his material. His first botanical publication appeared in 1897 under the title "Materialien zur Flora des Loveč-Bezirkcs," and enumerates 1200 plants of which 30 were new to the Bulgarian flora. Since that date he published over 60 papers on Bulgarian plants, in German and Bulgarian. He described about 30 new species and many new subspecies and varieties. Some of these have since become well-known garden plants—as *Haberlea Ferdinandi-Coburgi*. About 20 other species and varieties found by him were described as new by other botanists. He was also an authority on Bulgarian folk-medicine.

Like many Bulgarians, Urumoff was a strong healthy long-lived man of a fine presence and with an attractive personality. The writer well remembers visiting him at his charming house in Sofia

in 1922, when he was still at the high level of his physical and mental powers. An enthusiastic and true lover of nature, he was one of the energetic band of investigators who, later with the patronage of Prince (afterwards Czar) Ferdinand and still later that of King Boris, did so much to make the rich flora of Bulgaria known to their fellow botanists. Since the first botanists of modern times to visit Bulgaria were Englishmen (Sibthorp, Clarke) it is appropriate that an appreciation of Urumoff's work should appear in the Kew Bulletin.

W. B. TURRILL.

Pterocarpus Draco L.: *addenda et corrigenda*.—The question of the valid publication of, authority for and type species of the generic name *Pterocarpus* (cf. Kew Bull. 1937, 63) presents some curious anomalies and complexities.

The first appearance of the name in botanical literature is in Linnaeus, Fl. Zeyl. 196 (1748), where references are given to Commelin, Ray, Burman and Hermann, and a generico-specific description, but no specific phrase-name, is provided. Linnaeus referred the plant to the *Diadelphia*, among the *Obscurae*—"Plantae, quarum fructificatio parum, nec sufficienter, cognita," but expressed a doubt whether it should not rather be placed in the *Decandria**. The name occurs also, again as a uninomial, in Linn. Mat. Med. 184 (1749), for the plant producing the officinal resin *Sanguis Draconis*.

The first† author to employ *Pterocarpus* as a generic name under the Linnean binary system was Jacquin, Sel. Stirp. Amer. Hist. 283 (1763). In that place the name appears as follows:

PTEROCARPUS.

1. PTEROCARPUS (*officinalis*.) TAB. CLXXXIII. Fig. 92.
Linn. mat. med. 522.
Lingoum. *Rumpf.* 2. p. 205 t. 70?

This is followed by a long specific description‡ (flowers and fruit were, however, unknown); notes on economic and medicinal uses; the vernacular name *Sangre de Dragon*, applied to the resin; and the habitat, "in sylvaticis insulae Tierra Bomba [Cartagena, Colombia]. Conjicio florere Decembri."

Under Art. 42 of the International Rules, a generic name is validly published if "accompanied by the citation of a previously and effectively published description of the genus under another name." Jacquin's reference to Linn. Mat. Med. constitutes an indirect citation, since Linnaeus there refers back to his Fl. Zeyl. where a description of *Pterocarpus* was "previously and effectively"

* Cf. also his footnote in Syst. Nat. ed. 12, 2, 473 (1767).

† Cf. Kew Bull. 1937, 64, footnote*.

‡ For the valid publication of specific epithets anteriorly to that of the corresponding generic name, see Sprague & Riley in Journ. Bot. 62, 7 (1924); Sprague & Hubbard in Kew Bull. 1933, 15; Hubbard in Kew Bull. 1936, 319.

published. It might seem, therefore, at first sight, that this generic name should, under the Rules, be ascribed to [L.] Jacquin.

Investigation of the Mat. Med. and Fl. Zeyl. references reveals, however, that so many discordant elements were involved that it will be desirable to treat the name *Pterocarpus* [L.] Jacq. as a *nomen confusum* (see Art. 64). The plant figured and described by Commelin and Ray was certainly *Pterocarpus indicus*. But the plant referred to by Hermann and Burman has been definitely identified by Trimen (in Journ. Linn. Soc. **24**, 154 : 1887 ; Handb. Fl. Ceyl. **2**, 93 : 1894 ; cf. O. Kuntze, Rev. Gen. Pl. **1**, 202 : 1891) as *Derris uliginosa* Benth., and Linnaeus apparently drew up his description of *Pterocarpus* in the Fl. Zeyl. from Hermann's specimens of that species. Moreover, *P. indicus* does not occur in Ceylon, the only species there being *P. Marsupium* Roxb. Finally, the source of the actual resin *Sanguis Draconis* of the Materia Medica was the palm *Daemonorhops*.

Thus Linnaeus was confusing four species belonging to three genera and two distinct families. *Pterocarpus* [L.] Jacq. is accordingly proposed for addition to the list of *nomina confusa* forming Appendix V of the International Rules (see Art. 64).

The first unambiguous application of the name *Pterocarpus* dates from Linn. Gen. ed. 6, 366 (1764). Linnaeus published it as "PTEROCARPUS. authore Loefflingio," and it is evident from a comparison that the description was almost entirely compiled from Loeffling's *Draco arbor* and *Sanguis draconis** in his Iter Hisp. 266, 273 (1758). These, of course, were of South American origin.

This fact was, unfortunately, overlooked by the writer when drawing up the note on *P. Draco* L. in Kew Bull. 1937, 63, and he is indebted to Messrs. E. J. H. Corner and C. X. Furtado, of Singapore, for drawing his attention to it. In their words, "since *Pterocarpus* as published by Linnaeus was a monotypic genus and since the generic description was based on the American plant, one is justified in interpreting the species, *P. Draco* L., by reference to an American plant." It becomes especially desirable to do this in view of Linnaeus's own subsequent treatment of it. In Mant. Pl. Alt. 438 (1771) he writes : "Divide Synonyma cum *asiatica*, quae videtur diversa Species ab *americana*." In Schreber's edition of the Mat. Med., p. 169 (1773), the reference to Commelin is replaced by L. Sp. Pl., Jacq. Hist. and Loefl., and *Lingoum* Rumph. is treated as a variety β . The habitats are given as : " α America meridionalis ; β India orientalis, Java."† The following note is added :

* It is interesting to note that Loeffling recognized this as distinct from the Old World plant : "I find that our *Sanguis Draconis Occidentalis* is of the same [genus], as [*Sanguis Draconis*] *Orientalis* ; but a different species. . ." (l.c. 273).

† In the 13th edition of Linn. Syst. Veg., p. 533 (1774), Murray remarks under *P. Draco* : "Forte orientalis et occidentalis distinctae species." This note was repeated by himself and Persoon in successive editions of the Systema, but it was left to Willdenow to provide a binary name for the eastern plant.

"*Sanguis Draconis* a variis arboribus praeparari fertur; ex hac, Calamo & Dracaena." The *Calamus* was certainly *Daemonorhops* spp.

It was no doubt this omission by Schreber of the Commelin reference, and the treatment of the Rumphian plant as a distinct variety, that led Willdenow to make the latter the basis of his new species *Pterocarpus indicus* (Sp. Pl. 3, 904: 1803). He, however, unaccountably reintroduced the Commelin reference under *P. Draco*, the "Americanische Flügelfrucht," instead of under the Asiatic species.

To sum up: the name *Pterocarpus* was originally based by Linnaeus on specimens of *Derris uliginosa* from Ceylon, which he erroneously identified with Commelin's figure of *Pterocarpus indicus* originating from Java. Both plants had superficially similar winged fruits. Owing to the occasional employment of *Pterocarpus* resin as a substitute for the genuine officinal *Sanguis Draconis*, the true source of which was apparently unknown to them, Jacquin and Linnaeus gave the specific epithets *officinalis* and *Draco* in the belief that *Pterocarpus* produced the true *Sanguis Draconis* of commerce. Reference to any standard pharmaceutical work reveals that the actual source of this was *Daemonorhops Draco* and other East Indian palms.*

As employed for the last 170 years, however, the generic name *Pterocarpus* is typified by an American plant, and is associated with the unequivocal generic and specific descriptions of [Löefling apud] Linnaeus (Gen. Pl. l.c.) and Jacquin, respectively.

H. K. AIRY-SHAW.

Cacao Fermentation†.—The Cacao producer is in a much better position to know the market requirements for his product than is the producer of coffee, tea and other crops used extensively as beverages and stimulants. The reason for this is that, in the main, cacao beans are treated as an unmanufactured product and are purchased by large manufacturers, who convert these into cocoa, chocolate, etc. Such manufacturers are therefore in a position to know and state exactly what they require.

The author shows that, though cacao beans resembling in appearance the fermented bean can be and have been prepared experimentally without fermentation, such beans, when roasted, lack both flavour and aroma and it is made clear that, as far as experience goes, some degree of fermentation is essential in the preparation for the market of all varieties of cacao beans.

The author has rendered a valuable service to all cacao producers by bringing together and assessing the literature dealing with the science and practice of cacao fermentation. No one is

* For help in this connexion I am indebted to Dr. T. A. Sprague.

† By Arthur W. Knapp, M.Sc., F.I.C., M.I.Chem.E., Chief Chemist, Messrs. Cadbury Bros., Ltd. A Contribution from the Laboratories at Bournville. London: John Bale, Sons and Curnow, Ltd., 1937. Price 10s.

better qualified to write such a monograph than Mr. Knapp, whose practical and experimental knowledge of this operation, coupled with his experience in the manufacture of chocolate and cocoa, render him peculiarly fitted for this task.

The work will serve as a most useful guide to those whose interests lie in the improved quality of the cacao of commerce. The scientific basis of fermentation is explained, but no hard and fast rules are possible since fermentation is affected not only by the kind of cacao grown, but also by the environment.

H. C. SAMPSON.

A Note-Book of Tropical Agriculture.*—A second edition of this useful little book of reference, which was first published in 1933, has now been issued. It is modelled somewhat on the lines of McConnell's "Agricultural Note-Book of Facts and Figures," which is doubtless familiar to all agricultural students and many agriculturists in Great Britain, and is designed to serve a similar purpose for those concerned with tropical agriculture.

The book is interleaved, which adds to its usefulness, but one could wish that it had been bound a little more securely, especially as it will be used mainly in the tropics.

Weeds, Weeds, Weeds†.—Sir Charles Boys, F.R.S., is well known to visitors to Kew as the maker and donor of the unique sundial in Cambridge Cottage Garden, and to the scientific world as a physicist of rare ingenuity and distinction, but he emerges in his 83rd year as a friend to the gardener in his amusingly-written booklet "Weeds, Weeds, Weeds."

Sir Charles has obviously made a careful study of the habits of our common persistent weeds, such as plantains, bindweed, thistles and the like, and his suggestions for their eradication are based on his own practical experience, aided, as one would expect, by his ingenuity both in tool-making and in the employment of the cheapest and most effective chemical substances. We commend the book to all gardeners who suffer from these pests.

* Compiled by R. Cecil Wood, M.A., Dip. Agric. Cantab. Published by the Imperial College of Tropical Agriculture, Trinidad, 1937. Copies obtainable on application to the Editor, "Tropical Agriculture," Imperial College of Tropical Agriculture, Trinidad (price 5s., post free: 5s. 3d., post free, to foreign countries).

† By Sir Charles V. Boys, LL.D., F.R.S., etc. Published by The Old Westminster Press, Wightman & Co., Ltd., Regency Street, London, 1937. Pp. 69. Price 1s. (by post 1s. 2d.).

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